

# PERT

# College-Ready

# Booklet

Math Sample Questions & Video Links

# Directions

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Please note that you will need an internet connection in order to utilize the web links.

This booklet contains mathematics problems and concepts that will help students prepare for Florida's Postsecondary Education Readiness Test (PERT). Workout each exercise and keep track of your answers. If you run into difficulty, click on the link next to [Hint]. Each link will take you to a specific video on the Khan Academy website that will discuss the topic further.

Once you have finished all of the exercises, you may check the answers in the back.

To learn more about the PERT, click here:

[https://college.measuredsuccess.com/mscollege/help\\_resources/P.E.R.T\\_Study\\_Guide.pdf](https://college.measuredsuccess.com/mscollege/help_resources/P.E.R.T_Study_Guide.pdf)

To learn more about PERT test preparation at Miami Dade College, click here:

<http://www.mdc.edu/main/testing/examprep/pert.aspx>

To learn more about Khan Academy, click here:

<http://www.khanacademy.org/>

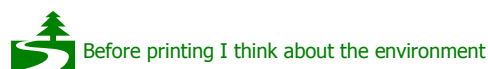
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# PERT Math Subtest Example Problems

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1. Add:

$$38 + 17$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/addition-subtraction/v/addition-2>

Answers:

- A) 45
  - B) 55
  - C) 21
  - D) 54
- 

2. Subtract:

$$604 - 87$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/addition-subtraction/v/subtraction-3---introduction-to-borrowing-or-regrouping>

Answers:

- A) 617
  - B) 691
  - C) 517
  - D) 591
- 

3. Multiply:

$$47 \times 32$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/multiplication-division/v/multiplication-5---2-digit-times-a-2-digit-number>

Answers:

- A) 1,504
- B) 1,494
- C) 1,304

D) 79

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4. Use long division. If you have a remainder, use the letter R to denote this:

$$7509 \div 5$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/multiplication-division/v/division-3--more-long-division-and-remainder-examples>

Answers:

- A) 151
  - B) 151 R 4
  - C) 1,501
  - D) 1,501 R 4
- 

5. Add or subtract as indicated:

$$-13 - 9$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/negative-numbers/add-sub-negatives/v/adding-subtracting-negative-numbers>

Answers:

- A) -21
  - B) -22
  - C) 22
  - D) 4
- 

6. Multiply:

$$-92 \times -13$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/negative-numbers/add-sub-negatives/v/multiplying-positive-and-negative-numbers>

Answers:

- A) 1,196

- B) -1,196
  - C) 1,106
  - D) -1,106
- 

7. Rewrite using the distributive property:

$$2(3x - 5)$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/number-properties/v/the-distributive-property-2>

Answers:

- A)  $6x - 5$
  - B)  $3x - 10$
  - C)  $6x - 10$
  - D)  $-4x$
- 

8. Use the Order of Operations to simplify:

$$2 - 3(4 - 6) \div 3 - 1$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/order-of-operations/v/more-complicated-order-of-operations-example>

Answers:

- A) -1
  - B) -3
  - C) 1
  - D) 3
- 

9. Find the prime factorization of 24.

[Hint]: <http://www.khanacademy.org/math/arithmetic/factors-multiples/v/prime-factorization>

Answers:

- A)  $2^2 \cdot 3$

- B)  $3 \cdot 8$
  - C)  $2^3 \cdot 3$
  - D)  $2 \cdot 3 \cdot 4$
- 

10. Simplify the fraction, write in lowest terms:

$$\frac{24}{36}$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/fractions/v/fractions-in-lowest-terms>

Answers:

- A)  $\frac{3}{4}$
  - B)  $\frac{12}{18}$
  - C)  $\frac{2}{3}$
  - D)  $\frac{4}{6}$
- 

11. Convert  $7\frac{2}{3}$  to an improper fraction.

[Hint]: <http://www.khanacademy.org/math/arithmetic/fractions/v/converting-mixed-numbers-to-improper-fractions>

Answers:

- A)  $\frac{17}{3}$
  - B)  $\frac{23}{3}$
  - C)  $\frac{23}{2}$
  - D)  $\frac{17}{2}$
- 

12. Subtract:

$$\frac{3}{14} - \frac{1}{7}$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/fractions/v/adding-fractions-with-unlike-denominators>

Answers:

- A)  $\frac{1}{14}$
  - B)  $\frac{2}{14}$
  - C)  $\frac{1}{7}$
  - D)  $\frac{2}{7}$
- 

13. Divide:

$$-\frac{14}{21} \div \frac{6}{7}$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/fractions/v/dividing-fractions>

Answers:

- A)  $\frac{4}{7}$
  - B)  $-\frac{4}{7}$
  - C)  $-\frac{7}{9}$
  - D)  $\frac{7}{9}$
- 

14. Round to the nearest hundredth.

54.9439

[Hint]: <http://www.khanacademy.org/math/arithmetic/decimals/v/rounding-decimals>

Answers:

- A) 55
  - B) 54.9
  - C) 54.94
  - D) 54.95
- 



15. Add:

$$50.012 + 7.59 + 106.04$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/decimals/v/adding-decimals>

Answers:

- A) 163.642
  - B) 61,375
  - C) 61.375
  - D) 16.3642
- 

16. Convert  $\frac{9}{50}$  into a decimal.

[Hint]: <http://www.khanacademy.org/math/arithmetic/decimals/v/converting-fractions-to-decimals-example>

Answers:

- A) 0.19
  - B) 0.18
  - C) 0.20
  - D) 0.215
- 

17. Divide 12.52 by 0.05.

[Hint]: <http://www.khanacademy.org/math/arithmetic/decimals/v/dividing-decimal>

Answers:

- A) 250.4
  - B) 254
  - C) 251.3
  - D) 249
- 

18. Convert 7.5% to a decimal number.

[Hint]: <http://www.khanacademy.org/math/arithmetic/percents/v/representing-a-number-as-a-decimal-percent-and-fraction>



Before printing I think about the environment



Answers:

- A) 7.5
  - B) 0.75
  - C) 0.075
  - D) 0.0075
- 

19. Simplify:

$$\frac{x^3y^7}{x^7y^2}$$

[Hint]: <http://www.khanacademy.org/math/arithmetic/basic-exponents/exponent-properties/v/exponent-properties-involving-quotients>

Answers:

- A)  $x^{10}y^9$
  - B)  $x^4y^5$
  - C)  $\frac{x^4}{y^5}$
  - D)  $\frac{y^5}{x^4}$
- 

20. A catering company requires that they have 3 servers scheduled per every 20 patrons. If this company is planning to host an event for 100 patrons, how many servers should they schedule?

[Hint]: <http://www.khanacademy.org/math/arithmetic/basic-ratios-proportions/v/find-an-unknown-in-a-proportion-2>

Answers:

- A) 9 servers
  - B) 12 servers
  - C) 15 servers
  - D) 18 servers
-

21. Express 25 degrees Celsius ( $^{\circ}\text{C}$ ) as a temperature in degrees Fahrenheit ( $^{\circ}\text{F}$ ) using the formula:

$$F = \frac{9}{5}C + 32$$

[Hint]: <http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/variable-and-expressions/v/evaluate-a-formula-using-substitution>

Answers:

- A)  $75^{\circ}\text{F}$
  - B)  $77^{\circ}\text{F}$
  - C)  $45^{\circ}\text{F}$
  - D)  $-35^{\circ}\text{F}$
- 

22. Solve:

$$4x - 9 = 3$$

[Hint]: [http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations\\_beginner/v/equations-2](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/equations-2)

Answers:

- A)  $x = 4$
  - B)  $x = -6$
  - C)  $x = 12$
  - D)  $x = 3$
- 

23. Solve:

$$\frac{x}{2} + 2 = 1$$

[Hint]: [http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations\\_beginner/v/solving-equations-1](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/solving-equations-1)

Answers:

- A)  $x = -1$
- B)  $x = -2$

- C)  $x = 1$
- D)  $x = 2$

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24. The perimeter of a rectangular slab of concrete is 24 meters. If the length of the rectangular slab is 2 meters longer than its width, what is the width of the slab?

[Hint]: [http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations\\_beginner/v/application-problems-with-equation-in-one-variable](http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/application-problems-with-equation-in-one-variable)

Answers:

- A) 5 meters
- B) 6 meters
- C) 7 meters
- D) 8 meters

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25. Solve:

$$\frac{2}{3}x - 1 = \frac{1}{6}x + 2$$

[Hint]: <http://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/basic-equation-practice/v/solving-equations-with-the-distributive-property-2>

Answers:

- A)  $x = 9$
- B)  $x = 8$
- C)  $x = 7$
- D)  $x = 6$

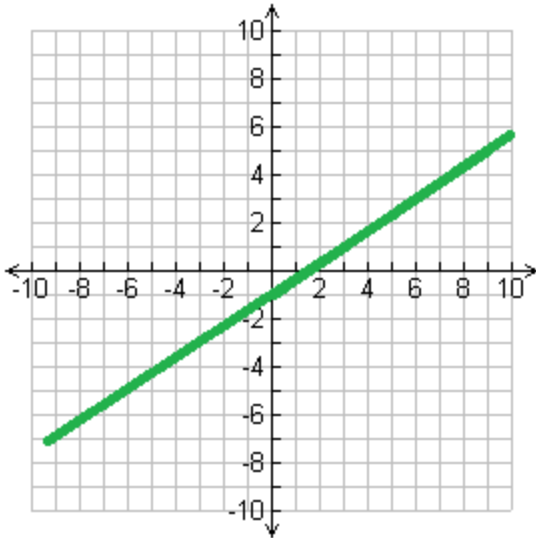
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26. Choose the graph that best represents the following linear equation:

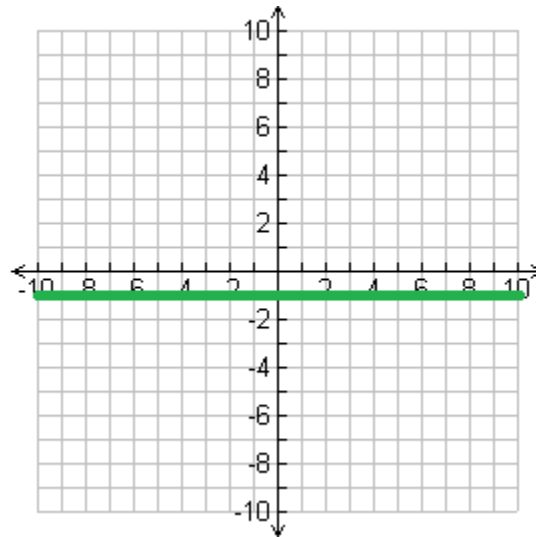
$$y = \frac{2}{3}x - 1$$

[Hint]: [http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing\\_solutions/v/algebra--graphing-lines-1](http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing_solutions/v/algebra--graphing-lines-1)

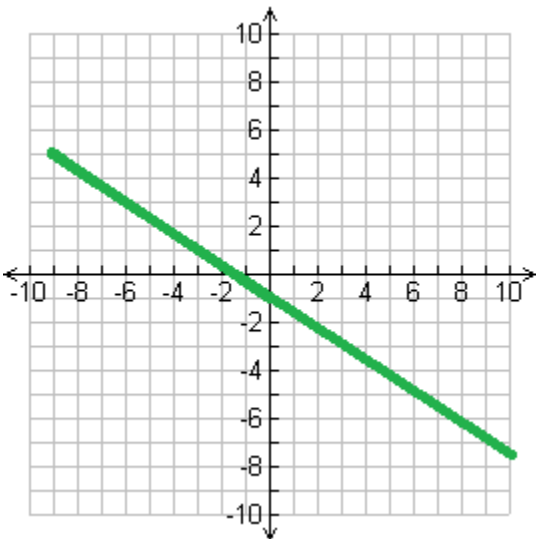
Answers:



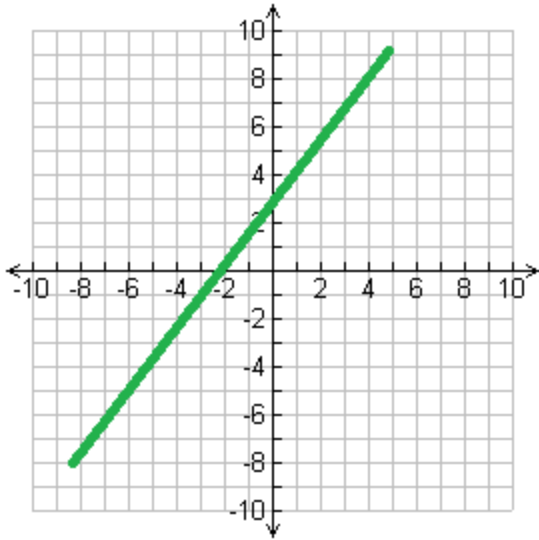
A)



B)



C)



27. Find the x-intercept for the linear equation:

$$4x - 3y = 12$$

[Hint]: [http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing\\_with\\_intercepts/v/x--and-y-intercepts](http://www.khanacademy.org/math/algebra/linear-equations-and-inequalities/graphing_with_intercepts/v/x--and-y-intercepts)

Answers:

- A) (0, -4)
- B) (0, 3)
- C) (-4, 0)
- D) (3, 0)

28. Solve the system of linear equations:

$$2x + 8y = -14$$

$$-3x + y = -18$$

[Hint]: <http://www.khanacademy.org/math/algebra/systems-of-equations-and-inequalities/systems-of-equations/overview/v/solving-systems-by-elimination-3>

Answers:

- A) (-3, 5)

- B) (5, -3)
- C) (-5, 3)
- D) (3, -5)

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29. Solve for x:

$$-2x + 4 > 5(x - 2)$$

[Hint]: [http://www.khanacademy.org/math/algebra/linear\\_inequalities/inequalities/v/multi-step-inequalities-3](http://www.khanacademy.org/math/algebra/linear_inequalities/inequalities/v/multi-step-inequalities-3)

Answers:

- A)  $x > 2$
- B)  $x > -2$
- C)  $x < 2$
- D)  $x < -2$

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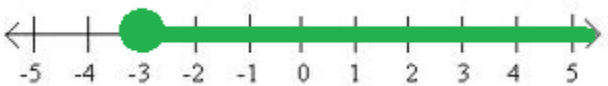

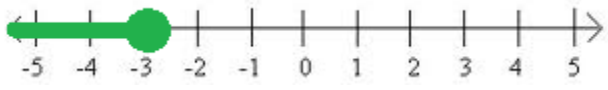
30. Which graph best represents the solution set to the linear inequality?

$$5x - 2 \leq 2x + 6$$

[Hint]:

[http://www.khanacademy.org/math/algebra/linear\\_inequalities/inequalities/v/inequalities-on-a-number-line](http://www.khanacademy.org/math/algebra/linear_inequalities/inequalities/v/inequalities-on-a-number-line)

Answers:

- A) 
- B) 
- C) 
- D) 

31. Find a factor of the quadratic expression:

$$x^2 + 4x - 21$$

[Hint]:

[http://www.khanacademy.org/math/algebra/quadratics/factoring\\_quadratics/v/factoring-quadratic-expressions](http://www.khanacademy.org/math/algebra/quadratics/factoring_quadratics/v/factoring-quadratic-expressions)

Answers:

- A)  $(x - 7)$
  - B)  $(x + 3)$
  - C)  $(x - 3)$
  - D)  $(x + 6)$
- 

32. Factor completely:

$$x^2 - 36$$

[Hint]:

[http://www.khanacademy.org/math/algebra/quadratics/factoring\\_quadratics/v/factoring-special-products](http://www.khanacademy.org/math/algebra/quadratics/factoring_quadratics/v/factoring-special-products)

Answers:

- A)  $(x + 3)(x - 12)$
  - B)  $(x - 4)(x + 9)$
  - C)  $(x + 6)(x + 6)$
  - D)  $(x - 6)(x + 6)$
- 

33. Factor completely:

$$6x^2 - 11x - 10$$

[Hint]:

[http://www.khanacademy.org/math/algebra/quadratics/factoring\\_quadratics/v/factor-by-grouping-and-factoring-completely](http://www.khanacademy.org/math/algebra/quadratics/factoring_quadratics/v/factor-by-grouping-and-factoring-completely)

Answers:

- A)  $(3x - 2)(2x + 5)$
- B)  $(6x - 1)(x + 10)$



- C)  $(2x - 5)(3x + 2)$   
D)  $(x - 5)(6x + 2)$
- 

34. Simplify:

$$(x^3y)^2(xy^5)^3$$

[Hint]: <http://www.khanacademy.org/math/algebra/exponent-equations/exponent-properties-algebra/v/exponent-properties-involving-products>

Answers:

- A)  $x^8y^{10}$   
B)  $x^9y^{17}$   
C)  $x^9y^{11}$   
D)  $x^8y^{17}$
- 

35. Simplify:

$$(3x^2 - 4x + 2) - (8x - 3)$$

[Hint]:

[http://www.khanacademy.org/math/algebra/polynomials/polynomial\\_basics/v/subtracting-polynomials](http://www.khanacademy.org/math/algebra/polynomials/polynomial_basics/v/subtracting-polynomials)

Answers:

- A)  $3x^2 - 12x - 1$   
B)  $3x^2 - 12x + 5$   
C)  $-5x^2 - 4x + 5$   
D)  $-5x^2 + 4x - 1$
- 

36. Divide the polynomials:

$$(x^2 - 5x + 12) \div (x + 3)$$

[Hint]:

[http://www.khanacademy.org/math/algebra/polynomials/dividing\\_polynomials/v/dividing-polynomials-with-remainders](http://www.khanacademy.org/math/algebra/polynomials/dividing_polynomials/v/dividing-polynomials-with-remainders)



Answers:

- A)  $x + 8 + \frac{36}{x+3}$
  - B)  $x - 8 + \frac{36}{x+3}$
  - C)  $x - 8 + \frac{12}{x+3}$
  - D)  $x - 8$
- 

37. Solve:

$$\frac{3}{2x} + \frac{1}{4} = \frac{1}{6x}$$

[Hint]: [http://www.khanacademy.org/math/algebra/rational-expressions/rational\\_expressions/v/solving-rational-equations-2](http://www.khanacademy.org/math/algebra/rational-expressions/rational_expressions/v/solving-rational-equations-2)

Answers:

- A)  $-\frac{16}{3}$
  - B)  $-16$
  - C)  $\frac{16}{3}$
  - D)  $4$
- 

38. Add the rational expressions:

$$\frac{1}{2x^2} + \frac{4}{3x}$$

[Hint]: [http://www.khanacademy.org/math/algebra/rational-expressions/rational\\_expressions/v/subtracting-rational-expressions](http://www.khanacademy.org/math/algebra/rational-expressions/rational_expressions/v/subtracting-rational-expressions)

Answers:

- A)  $\frac{11x}{6x^2}$
- B)  $\frac{11}{6x}$
- C)  $\frac{8x+3}{6x^2}$
- D)  $\frac{8x+1}{2x^2}$



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39. Solve for x:

$$x^2 - 2x = 15$$

[Hint]:

[http://www.khanacademy.org/math/algebra/quadratics/factoring\\_quadratics/v/Example%202:%20Solving%20a%20quadratic%20equation%20by%20factoring](http://www.khanacademy.org/math/algebra/quadratics/factoring_quadratics/v/Example%202:%20Solving%20a%20quadratic%20equation%20by%20factoring)

Answers:

- A)  $x = -3, x = 5$
- B)  $x = 3, x = -5$
- C)  $x = 2, x = -3$
- D)  $x = -2, x = 3$

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40. Simplify:

$$\sqrt[3]{16x^2y^{10}}$$

[Hint]: <http://www.khanacademy.org/math/algebra/exponent-equations/exponent-properties-algebra/v/simplifying-cube-roots>

Answers:

- A)  $4xy^5$
- B)  $4xy^7$
- C)  $2xy^{53}\sqrt{2}$
- D)  $2y^{33}\sqrt{2x^2y}$

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41. Is  $(-3, 5)$  a solution to the equation  $3x - 2y = 19$ ?

[Hint]:

[http://www.khanacademy.org/math/trigonometry/graphs/graphing\\_coordinates/v/ordered-pair-solutions-of-equations-2](http://www.khanacademy.org/math/trigonometry/graphs/graphing_coordinates/v/ordered-pair-solutions-of-equations-2)

Answers:

- A) Yes
- B) No

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42. Evaluate the function if  $x = -4$ .

$$f(x) = 3(5 - x)$$

[Hint]:

[http://www.khanacademy.org/math/trigonometry/functions\\_and\\_graphs/function\\_introduction/v/linear-function-graphs](http://www.khanacademy.org/math/trigonometry/functions_and_graphs/function_introduction/v/linear-function-graphs)

Answers:

- A) 27
- B) 3
- C) 12
- D) 19

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43. Evaluate the function if  $x = 3$ .

$$f(x) = \begin{cases} x^2 + 3 & \text{if } x < 3 \\ x & \text{if } x \geq 3 \end{cases}$$

[Hint]:

[http://www.khanacademy.org/math/trigonometry/functions\\_and\\_graphs/function\\_introduction/v/linear-function-graphs](http://www.khanacademy.org/math/trigonometry/functions_and_graphs/function_introduction/v/linear-function-graphs)

Answers:

- A)  $x$
- B) 3
- C) 12
- D) 1

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44. Find the domain of the function.

$$f(x) = \sqrt{4 + x}$$

[Hint]:

[http://www.khanacademy.org/math/trigonometry/functions\\_and\\_graphs/function\\_introduction/v/domain-of-a-function](http://www.khanacademy.org/math/trigonometry/functions_and_graphs/function_introduction/v/domain-of-a-function)



Answers:

- A)  $x > -4$
  - B)  $x \geq 4$
  - C)  $x \geq -4$
  - D)  $x < 4$
- 

45. Use the Quadratic Formula to solve.

$$5x^2 + 2x = -7$$

[Hint]:

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/quad\\_formula\\_tutorial/v/using-the-quadratic-formula](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/quad_formula_tutorial/v/using-the-quadratic-formula)

Answers:

- A)  $x = \frac{-1 \pm 6i}{5}$
  - B)  $x = \frac{-1 \pm i\sqrt{34}}{5}$
  - C)  $x = \frac{-1 \pm i\sqrt{35}}{5}$
  - D)  $x = \frac{1 \pm i\sqrt{34}}{5}$
- 

46. Identify the vertex of the parabola.

$$y = 3x^2 - 12x + 1$$

[Hint]:

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/solving\\_graphing\\_quadratics/v/quadratic-functions-3](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/solving_graphing_quadratics/v/quadratic-functions-3)

Answers:

- A) (3, -10)
  - B) (-4, 2)
  - C) (3, 10)
  - D) (2, -11)
-

47. Factor the difference of cubes completely.

$$54x^3 - 128$$

[Hint]:

[http://www.khanacademy.org/math/trigonometry/polynomial\\_and\\_rational/polynomial\\_tutorial/v/difference-of-cubes-factoring](http://www.khanacademy.org/math/trigonometry/polynomial_and_rational/polynomial_tutorial/v/difference-of-cubes-factoring)

Answers:

- A)  $2(3x + 4)(9x^2 - 12x + 16)$
  - B)  $2(27x^3 - 64)$
  - C)  $(3x - 4)(9x^2 + 12x + 16)$
  - D)  $2(3x - 4)(9x^2 + 12x + 16)$
- 

48. If  $\cos(\theta) = \frac{\sqrt{3}}{2}$ , determine the value of  $\theta$ .

[Hint]: [http://www.khanacademy.org/math/trigonometry/basic-trigonometry/inverse\\_trig\\_functions/v/inverse-trig-functions--arcsin](http://www.khanacademy.org/math/trigonometry/basic-trigonometry/inverse_trig_functions/v/inverse-trig-functions--arcsin)

Answers:

- A)  $30^\circ$
  - B)  $45^\circ$
  - C)  $60^\circ$
  - D)  $90^\circ$
- 

49. If you roll a six sided die, what is the probability that you will roll a number that is at least 5?

[Hint]:

[http://www.khanacademy.org/math/trigonometry/prob\\_comb/basic\\_prob\\_precalc/v/basic-probability](http://www.khanacademy.org/math/trigonometry/prob_comb/basic_prob_precalc/v/basic-probability)

Answers:

- A) .2000
- B) .3333
- C) .4000
- D) .6667



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50. The complex number  $i$  stands for  $\sqrt{-1}$ . Evaluate  $i^{27}$ .

[Hint]:

[http://www.khanacademy.org/math/trigonometry/imaginary\\_complex\\_precalc/i\\_precalc/v/calculating-i-raised-to-arbitrary-exponents](http://www.khanacademy.org/math/trigonometry/imaginary_complex_precalc/i_precalc/v/calculating-i-raised-to-arbitrary-exponents)

Answers:

- A)  $i$
- B)  $-i$
- C) 1
- D) -1

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END OF REVIEW

## Solutions:

- |       |       |       |
|-------|-------|-------|
| 1) B  | 18) C | 35) B |
| 2) C  | 19) D | 36) B |
| 3) A  | 20) C | 37) A |
| 4) D  | 21) B | 38) C |
| 5) B  | 22) D | 39) A |
| 6) A  | 23) B | 40) D |
| 7) C  | 24) A | 41) B |
| 8) D  | 25) D | 42) A |
| 9) C  | 26) A | 43) B |
| 10) C | 27) A | 44) C |
| 11) B | 28) B | 45) B |
| 12) A | 29) D | 46) D |
| 13) C | 30) C | 47) D |
| 14) C | 31) C | 48) A |
| 15) A | 32) D | 49) B |
| 16) B | 33) C | 50) B |
| 17) A | 34) B |       |