

Chapter 10 Prerequisite Skills

1. Consider the functions $f(x) = 2x^2 - 3x + 1$ and $g(x) = x^3 - 3x^2 + x + 2$. Determine each value.

- a) $f(-3)$
- b) $g(-1)$
- c) $g(0) + f(0)$
- d) $f\left(\frac{1}{4}\right)$
- e) $g(-x)$

2. Add the expressions in each pair, and then simplify.

- a) $3x - 5$ $1 - x$
- b) $-2x$ $-4x^2 + x - 1$
- c) $5x^2 - 4x + 3$ $1 - x - x^2$
- d) $x^3 - 4x^2 + 2x$ $3x^3 - 2x + x^2 - 8$

3. Simplify.

- a) $2x - (3x - 2)$
- b) $(x - 3) - (x - 5)$
- c) $(2x^2 - 8x + 7) - (x^2 - 3x - 1)$
- d) $(-2x^2 + 3x) - (1 - 2x + 3x^2)$

4. Suppose you are asked to determine the difference between $2x^2 - 7x$ and $x^2 - 4x$. How many answers are possible? Explain.

5. Simplify.

- a) $x(3x^2 - x + 1)$
- b) $(4x)(-3x^2)$
- c) $(x - 7)(3x - 1)$
- d) $(2x + 1)^2$
- e) $(x + 1)(x^2 - 2x + 3)$
- f) $(x - 2)^3$

6. State any non-permissible values for x , and then simplify.

- a) $\frac{x^2 + x - 6}{x + 3}$
- b) $\frac{3x^2 + 2x - 1}{3x - 1}$
- c) $(2x^2 - 3x + 1) \div (x - 1)$

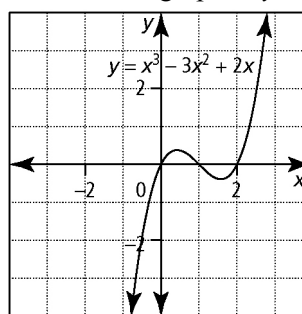
7. Write an equation for each line in slope-intercept form.

- a) slope of 2 and y -intercept of -5
- b) slope of -3 and through $(-1, 4)$
- c) through $(-2, 1)$ and $(0, -5)$
- d) through $(1, -2)$ and perpendicular to a line with slope $\frac{1}{4}$

8. Determine an equation for each parabola in the form $y = ax^2 + bx + c$.

- a) A parabola with x -intercepts -3 and 2 .
- b) A parabola that opens downward and passes through $(1, 0)$.

9. Consider the graph of $y = x^3 - 3x^2 + 2x$.



- a) What are the x -intercepts?
- b) What are the domain and range?

10. If $x + 2$ is a factor of the function $p(x) = x^3 - x^2 - 10x - 8$, then $p(x)$ can be written in the form $(x + 2)(ax^2 + bx + c)$.

- a) Determine the values of a , b , and c .
- b) Write $p(x)$ as the product of 3 factors.



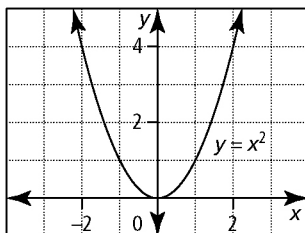
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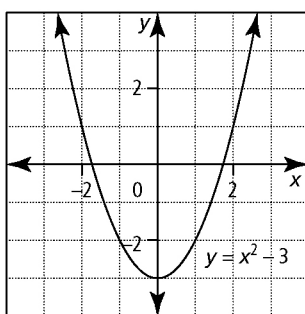
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(continued)

11. Describe the transformation on Graph A that results in Graph B.

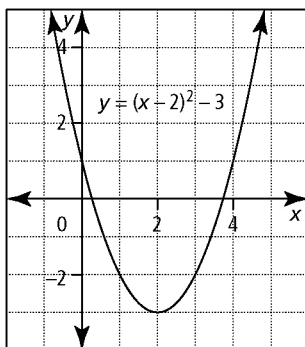
a) Graph A



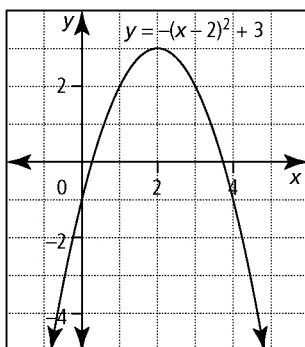
Graph B



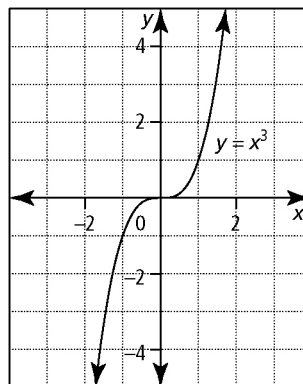
b) Graph A



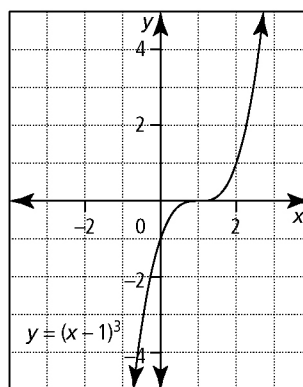
Graph B



c) Graph A



Graph B



12. Refer to #11. Let $y = f(x)$ represent Graph A. Write an equation for Graph B.

