1. Find all the zeros of the function.

$x(x - 5)^2$

a. 0, 5
b. 1, 5
c. ±5
d. 1, –5
e. 0, –5

6. List all the possible rational zeros of f.

$f(x) = x^3 + x^2 - 9x - 9$

a. 1, –3, –9
b. 1, 3, 9
c. $\pm i$, $\pm 3i$, $\pm 9i$
d. –1, –3, ±9
e. ±1, ±3, ±9

5. Find all the rational zeros of the function.

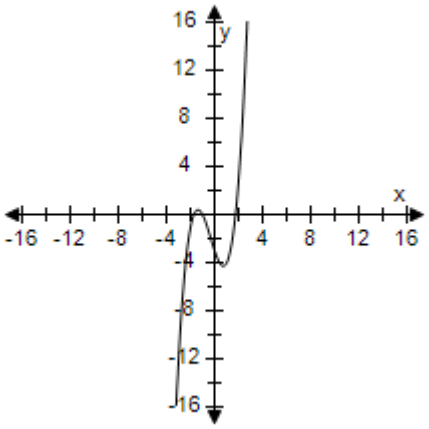
$x^3 - 18x^2 + 108x - 216$

a. –6
b. 0, –1
c. 0, 6
d. 6
e. ±6

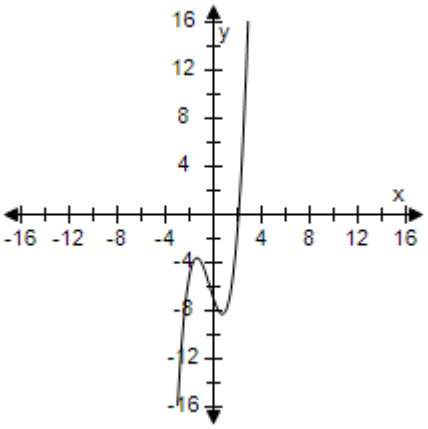
7. Select the graph of *f*.

$f(x) = x^3 + x^2 - 3x - 3$

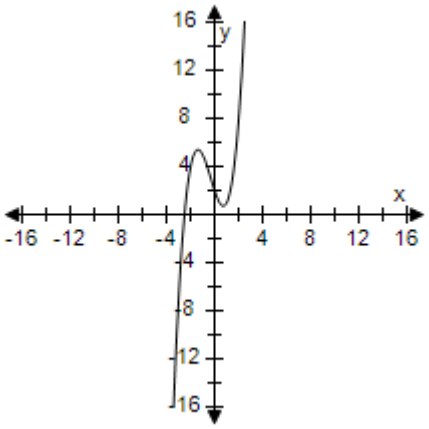
a.



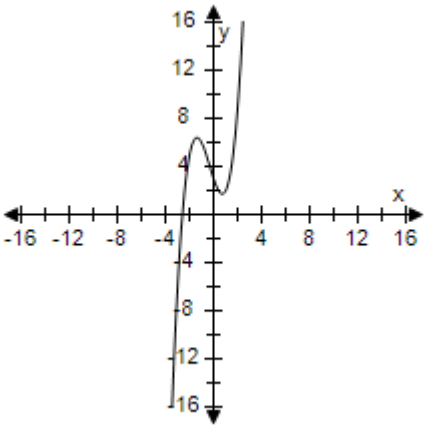
b.



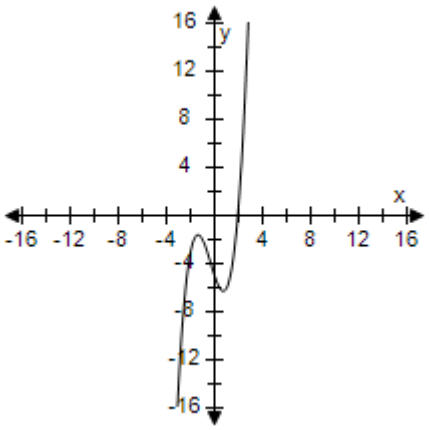
c.



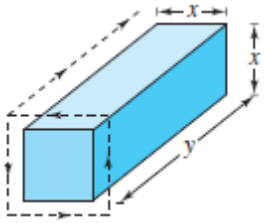
d.



e.



10. A rectangular package to be sent by a delivery service can have a maximum combined length and girth (perimeter of a cross section) of 168 inches.



Write a function that represents the volume of the largest possible package with a square cross-section with side x.

a. $V(x) = -4x^2(168 + x)$
b. $V(x) = 4x^2(42 + x)$
c. $V(x) = 4x^2(42 - x)$
d. $V(x) = 4x^2(168 - x)$
e. $V(x) = -4x^2(42 - x)$

15. Find all real solutions of the polynomial equation $x^4 - 7x^3 + 42x - 36 = 0$.

a. $x = 1, 6, \pm\sqrt{6}$
b. $x = 1, 36$
c. $x = 1, \pm\sqrt{6}$
d. $x = 1, -7, -6$
e. $x = 1, -36, 12$

21. Find all the real zeros of $f(x) = 3x^3 - 9x^2 + 3x - 9$.

a. $x = 3$
b. $x = 3, -\frac{1}{3}$
c. $x = \frac{1}{3}, -\frac{1}{9}$
d. $x = \pm 1, 3$
e. $x = 3, 1, -9$

30. Use the given zero to find all the zeros of the function.

Function	Zero
$7x^3 + 8x^2 + 175x + 200$	$5i$

a. $\pm 5i, \frac{8}{7}$
b. $\pm 5i, -\frac{8}{7}$
c. $\pm 5i, -8$
d. $\pm 5i, -\frac{7}{8}$
e. $\pm 5i, \pm\frac{8}{7}i$

38. Find all the zeros of the function and write the polynomial as a product of linear factors.

$x^4 + 40x^2 + 144$

a. $\pm 6i, \pm 2i; (x + 6i)(x - 6i)(x + 2)(x - 2)$
b. $\pm 6i, \pm 2i; (x + 6i)(x - 6i)(x + 2i)(x - 2i)$
c. $-6i, -2i; (x - 6i)(x - 6i)(x - 2i)(x - 2i)$
d. $6i, 2i; (x + 6i)(x + 6i)(x + 2i)(x + 2i)$
e. $\pm 6i, \pm 2i; (x + 6)(x - 6)(x + 2i)(x - 2i)$

53. Given that $x = 5 - 3i$ is a zero of $f(x) = x^3 - 4x^2 - 26x + 204$, find all the zeros of f.

a. $x = 5 - 3i, -5 + 3i, -6$
b. $x = 5 - 3i, 5 + 3i, -3$
c. $x = 5 - 3i, 5 + 3i, -6$
d. $x = 5 - 3i, -5 - 3i, -3$
e. $x = 5 - 3i, -5 + 3i, -3$