

A.APR.B.3: Zeros of Polynomials

1 What are the zeros of $f(x) = (2x - 4)(3x + 4)$?

- 1) $\left\{-\frac{4}{3}, 2\right\}$
- 2) $\{-4, 4\}$
- 3) $\left\{-2, \frac{4}{3}\right\}$
- 4) $\{-4, 2\}$

2 The zeros of the function $p(x) = x^2 - 2x - 24$ are

- 1) -8 and 3
- 2) -6 and 4
- 3) -4 and 6
- 4) -3 and 8

3 The zeros of the function $f(x) = x^2 - 5x - 6$ are

- 1) -1 and 6
- 2) 1 and -6
- 3) 2 and -3
- 4) -2 and 3

4 What are the zeros of the function

$$f(x) = x^2 - 13x - 30?$$

- 1) -10 and 3
- 2) 10 and -3
- 3) -15 and 2
- 4) 15 and -2

5 The zeros of the function $f(x) = 2x^2 - 4x - 6$ are

- 1) 3 and -1
- 2) 3 and 1
- 3) -3 and 1
- 4) -3 and -1

6 The zeros of the function $f(x) = 3x^2 - 3x - 6$ are

- 1) -1 and -2
- 2) 1 and -2
- 3) 1 and 2
- 4) -1 and 2

7 The zeros of the function $f(x) = (x + 2)^2 - 25$ are

- 1) -2 and 5
- 2) -3 and 7
- 3) -5 and 2
- 4) -7 and 3

8 Keith determines the zeros of the function $f(x)$ to be -6 and 5 . What could be Keith's function?

- 1) $f(x) = (x + 5)(x + 6)$
- 2) $f(x) = (x + 5)(x - 6)$
- 3) $f(x) = (x - 5)(x + 6)$
- 4) $f(x) = (x - 5)(x - 6)$

9 For which function defined by a polynomial are the zeros of the polynomial -4 and -6 ?

- 1) $y = x^2 - 10x - 24$
- 2) $y = x^2 + 10x + 24$
- 3) $y = x^2 + 10x - 24$
- 4) $y = x^2 - 10x + 24$

- 10 If $f(x) = 2x^2 + x - 3$, which equation can be used to determine the zeros of the function?
- 1) $0 = (2x - 3)(x + 1)$
 - 2) $0 = (2x + 3)(x - 1)$
 - 3) $0 = 2x(x + 1) - 3$
 - 4) $0 = 2x(x - 1) - 3(x + 1)$
- 11 Determine all the zeros of $m(x) = x^2 - 4x + 3$, algebraically.
- 12 The function $r(x)$ is defined by the expression $x^2 + 3x - 18$. Use factoring to determine the zeros of $r(x)$. Explain what the zeros represent on the graph of $r(x)$.
- 13 Find the zeros of $f(x) = (x - 3)^2 - 49$, algebraically.
- 14 The zeros of the function $f(x) = x(x - 5)(3x + 6)$ are
- 1) 0, -5, and 2
 - 2) 0, 5, and -2
 - 3) -5 and 2, only
 - 4) 5 and -2, only
- 15 What are the zeros of $m(x) = x(x^2 - 16)$?
- 1) -4 and 4, only
 - 2) -8 and 8, only
 - 3) -4, 0, and 4
 - 4) -8, 0, and 8
- 16 If the zeros of the function $g(x)$ are $\{-3, 0, 4\}$, which function could represent $g(x)$?
- 1) $g(x) = (x + 3)(x - 4)$
 - 2) $g(x) = (x - 3)(x + 4)$
 - 3) $g(x) = x(x + 3)(x - 4)$
 - 4) $g(x) = x(x - 3)(x + 4)$
- 17 Which function has the zeros -1, 3, and -4?
- 1) $f(x) = (x + 1)(x - 3)(x - 4)$
 - 2) $g(x) = (x - 1)(x + 3)(x - 4)$
 - 3) $h(x) = (x + 1)(x - 3)(x + 4)$
 - 4) $k(x) = (x - 1)(x + 3)(x + 4)$
- 18 Which polynomial function has zeros at -3, 0, and 4?
- 1) $f(x) = (x + 3)(x^2 + 4)$
 - 2) $f(x) = (x^2 - 3)(x - 4)$
 - 3) $f(x) = x(x + 3)(x - 4)$
 - 4) $f(x) = x(x - 3)(x + 4)$
- 19 The zeros of a polynomial function are -2, 4, and 0. What are all the factors of this function?
- 1) $(x + 2)$ and $(x - 4)$
 - 2) $(x - 2)$ and $(x + 4)$
 - 3) x , $(x + 2)$, and $(x - 4)$
 - 4) x , $(x - 2)$, and $(x + 4)$
- 20 Explain how to determine the zeros of $f(x) = (x + 3)(x - 1)(x - 8)$. State the zeros of the function.

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Answer Section

1 ANS: 1

$$2x - 4 = 0 \quad 3x + 4 = 0$$

$$x = 2 \quad x = -\frac{4}{3}$$

REF: 062212ai

2 ANS: 3

$$p(x) = x^2 - 2x - 24 = (x - 6)(x + 4) = 0$$

$$x = 6, -4$$

REF: 061804ai

3 ANS: 1

$$f(x) = x^2 - 5x - 6 = (x + 1)(x - 6) = 0$$

$$x = -1, 6$$

REF: 061612ai

4 ANS: 4

$$x^2 - 13x - 30 = 0$$

$$(x - 15)(x + 2) = 0$$

$$x = 15, -2$$

REF: 061510ai

5 ANS: 1

$$2x^2 - 4x - 6 = 0$$

$$2(x^2 - 2x - 3) = 0$$

$$2(x - 3)(x + 1) = 0$$

$$x = 3, -1$$

REF: 011609ai

6 ANS: 4

$$3x^2 - 3x - 6 = 0$$

$$3(x^2 - x - 2) = 0$$

$$3(x - 2)(x + 1) = 0$$

$$x = 2, -1$$

REF: 081513ai

7 ANS: 4

$$(x+2)^2 - 25 = 0$$

$$((x+2)+5)((x+2)-5) = 0$$

$$x = -7, 3$$

REF: 081418ai

8 ANS: 3

REF: 061412ai

9 ANS: 2

$$(x+4)(x+6) = 0$$

$$x^2 + 10x + 24 = 0$$

REF: spr1303ai

10 ANS: 2

REF: 081816ai

11 ANS:

$$x^2 - 4x + 3 = 0$$

$$(x-3)(x-1) = 0$$

$$x = 1, 3$$

REF: 011826ai

12 ANS:

$$x^2 + 3x - 18 = 0 \quad \text{The zeros are the } x\text{-intercepts of } r(x).$$

$$(x+6)(x-3) = 0$$

$$x = -6, 3$$

REF: 061733ai

13 ANS:

$$(x-3)^2 - 49 = 0$$

$$(x-3)^2 = 49$$

$$x-3 = \pm 7$$

$$x = -4, 10$$

REF: 081631ai

14 ANS: 2

REF: 062409ai

15 ANS: 3

$$m(x) = x(x+4)(x-4)$$

REF: 082313ai

16 ANS: 3

REF: 012322ai

17 ANS: 3

REF: 082421ai

18 ANS: 3

REF: 061710ai

19 ANS: 3

REF: 012423ai

20 ANS:
Graph $f(x)$ and find x -intercepts. $-3, 1, 8$

REF: 081825ai