A.APR.B.3: Zeros of Polynomials 1

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 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

10 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) $y = x^2 - 10x + 24$

11 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) $0 = 2x(x - 1) - 3(x + 1)$

12 Determine all the zeros of $m(x) = x^2 - 4x + 3$, algebraically.

13 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 $r(x)$.

14 Find the zeros of $f(x) = (x - 3)^2 - 49$, algebraically.

15 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) $g(x) = x(x - 3)(x + 4)$

16 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) $f(x) = x(x - 3)(x + 4)$

17 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 $(x + 4)$

18 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

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

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

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: 3

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

REF: 082313ai

10 ANS: 2

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

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

REF: spr1303ai

11 ANS: 2 REF: 081816ai

12 ANS:

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

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

$x = 1, 3$

REF: 011826ai

13 ANS:

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

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

$x = -6, 3$

REF: 061733ai

14 ANS:

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

$(x-3)^2 = 49$

$x - 3 = \pm 7$

$x = -4, 10$

REF: 081631ai

15 ANS: 3 REF: 012322ai

16 ANS: 3 REF: 061710ai

17 ANS: 3 REF: 012423ai

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

REF: 081825ai