Finding Zeros of Polynomials WKST 1 (#1-14)/Review (#15-25)

State the possible rational roots for each equation.

1) $x^3 - x^2 - 15x - 25 = 0$

2) $x^3 - 3x^2 - 53x - 65 = 0$

3) $5x^3 - x^2 - 5x + 1 = 0$

4) $5x^3 + 11x^2 + 27x + 5 = 0$

5) $3x^3 - 5x^2 + x + 1 = 0$

6) $-4x^4 - 11x^2 + 8x + 7 = 0$

7) $10x^3 - 2x^2 - 25x + 5 = 0$

8) $25x^4 - 70x^3 + 58x^2 - 14x + 1 = 0$

Find all zeros. One zero has been given.

9) $f(x) = 3x^3 + 2x^2 - 19x + 6;\ 2$

10) $f(x) = 5x^3 - 21x^2 + 24x - 4;\ 2$

Find all zeros. One factor has been given.

11) $f(x) = 3x^3 + 4x^2 - 17x - 6;\ x + 3$

12) $f(x) = x^3 - 5x^2 + 2x + 8;\ x - 2$

State if the given binomial is a factor of the given polynomial.

13) $(x^3 - 5x^2 - 17x - 6) \div (x + 2)$

14) $(2x^3 + 12x^2 - 64x - 59) \div (2x - 8)$

Find all zeros.

15) $f(x) = x^3 + 64$

16) $f(x) = 5x^3 + x^2 - 5x - 1$

17) $f(x) = 3x^4 + 17x^2 - 6$

18) $f(x) = 2x^4 + 15x^2 - 27$

Divide.

19) $(k^3 + 8k^2 - 8) \div (k + 8)$

20) $(6x^3 - 17x^2 - 88x - 64) \div (6x + 7)$

Write a polynomial function of least degree with integral coefficients that has the given zeros.

21) $1,\ -1,\ -4$

22) $\sqrt{10},\ -\sqrt{10},\ \sqrt{6},\ -\sqrt{6}$

Finding Zeros of Polynomials WKST 1 (#1-14)/Review (#15-25)

State the possible rational roots for each equation.

1) $x^3 - x^2 - 15x - 25 = 0$

$\pm 1, \pm 5, \pm 25$

2) $x^3 - 3x^2 - 53x - 65 = 0$

$\pm 1, \pm 5, \pm 13, \pm 65$

3) $5x^3 - x^2 - 5x + 1 = 0$

$\pm 1, \pm \frac{1}{5}$

4) $5x^3 + 11x^2 + 27x + 5 = 0$

$\pm 1, \pm 5, \pm \frac{1}{5}$

5) $3x^3 - 5x^2 + x + 1 = 0$

$\pm 1, \pm \frac{1}{3}$

6) $-4x^4 - 11x^2 + 8x + 7 = 0$

$\pm 1, \pm 7, \pm \frac{1}{2}, \pm \frac{7}{2}, \pm \frac{1}{4}, \pm \frac{7}{4}$

7) $10x^3 - 2x^2 - 25x + 5 = 0$

$\pm 1, \pm 5, \pm \frac{1}{2}, \pm \frac{5}{2}, \pm \frac{1}{5}, \pm \frac{1}{10}$

8) $25x^4 - 70x^3 + 58x^2 - 14x + 1 = 0$

$\pm 1, \pm \frac{1}{5}, \pm \frac{1}{25}$

Find all zeros. One zero has been given.

9) $f(x) = 3x^3 + 2x^2 - 19x + 6;\ 2$

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

10) $f(x) = 5x^3 - 21x^2 + 24x - 4;\ 2$

$\left\{\frac{1}{5}, 2 \text{ mult. } 2\right\}$

Find all zeros. One factor has been given.

11) $f(x) = 3x^3 + 4x^2 - 17x - 6;\ x + 3$

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

12) $f(x) = x^3 - 5x^2 + 2x + 8;\ x - 2$

$\{4, -1, 2\}$

State if the given binomial is a factor of the given polynomial.

13) $(x^3 - 5x^2 - 17x - 6) \div (x + 2)$

Yes

14) $(2x^3 + 12x^2 - 64x - 59) \div (2x - 8)$

No

Find all zeros.

15) $f(x) = x^3 + 64$

$\{-4, 2 + 2i\sqrt{3}, 2 - 2i\sqrt{3}\}$

16) $f(x) = 5x^3 + x^2 - 5x - 1$

$\left\{-\frac{1}{5}, -1, 1\right\}$

17) $f(x) = 3x^4 + 17x^2 - 6$

$\left\{\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{3}, i\sqrt{6}, -i\sqrt{6}\right\}$

18) $f(x) = 2x^4 + 15x^2 - 27$

$\left\{3i, -3i, \frac{\sqrt{6}}{2}, -\frac{\sqrt{6}}{2}\right\}$

Divide.

19) $(k^3 + 8k^2 - 8) \div (k + 8)$

$k^2 - \frac{8}{k + 8}$

20) $(6x^3 - 17x^2 - 88x - 64) \div (6x + 7)$

$x^2 - 4x - 10 + \frac{6}{6x + 7}$

Write a polynomial function of least degree with integral coefficients that has the given zeros.

21) $1, \ -1, \ -4$

$f(x) = x^3 + 4x^2 - x - 4$

22) $\sqrt{10}, \ -\sqrt{10}, \ \sqrt{6}, \ -\sqrt{6}$

$f(x) = x^4 - 16x^2 + 60$