7.6 Real Zeros

Name:_____

List all possible rational zeros given by the Rational Zeros Theorem (but don't check to see which actually are zeros)

1. $P(x) = x^3 - 4x^2 + 3$

$\pm 1, \pm 3$

2. $P(x) = x^4 - 3x^3 - 6x + 8$

$\pm 1, \pm 2, \pm 4, \pm 8$

3. $P(x) = 2x^5 + 3x^3 + 4x^2 - 8$

$\pm 1, \pm 2, \pm 4, \pm 8, \pm \frac{1}{2}$

4. $P(x) = 6x^4 - x^2 + 2x + 12$

$\pm 1, \pm 2, \pm 3, \pm 4, \pm 6, \pm 12$
$\pm \frac{3}{2}, \pm \frac{1}{3}, \pm \frac{2}{3}, \pm \frac{4}{3}$

Use Descartes' Rule of Signs to determine how many positive and how many negative real zeros the polynomial can have.

5. $P(x) = x^3 - x^2 - x - 3$

6. $P(x) = 2x^3 - x^2 + 4x - 7$

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7. $P(x) = x^6 - x^4 - x^3 - 5x$

$P(x) = x^4 + x^3 + x^2 + x + 12$

Find all rational zeros of the polynomial

9. $P(x) = x^3 + 3x^2 - 4$

$x = 1$
$x = -2$

10. $P(x) = x^3 - 3x - 2$

$x = -1$
$x = 2$

Find all real zeros of the polynomial. Use the quadratic formula if necessary

11. $P(x) = x^3 + 4x^2 + 3x - 2$

zeros: $\{-2, -1+\sqrt{2}, -1-\sqrt{2}\}$

12. $P(x) = x^4 - 5x^3 - 5x^2 + 23x + 10$

zeros: $\{-2, 5, 1+\sqrt{2}, 1-\sqrt{2}\}$