

Solving Polynomials by Factoring

Use the zero product property to solve the factored polynomial

1) $f(x) = (x + 3)(x - 1)(3x + 5)$

$$x = -3, 1, -\frac{5}{3}$$

2) $y = (x^2 + 2)(x - 4)$

$$x = \pm i\sqrt{2}, 4$$

3) $f(x) = (x^2 - 3)(2x + 9)(x - 7)$

$$x = \pm\sqrt{3}, -\frac{9}{2}, 7$$

Solve the polynomials by factoring

4) $f(x) = 2x^3 - 3x^2 - 10x + 15$

$$x^2(2x - 3) - 5(2x + 3)$$

$$\rightarrow (x^2 - 5)(2x + 3)$$

$$x = \pm\sqrt{5}, -\frac{3}{2}$$

5) $y = x^3 + 3x^2 - 2x - 6$

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

$$\rightarrow (x^2 - 2)(x + 3)$$

$$x = \pm\sqrt{2}, -3$$

6) $f(x) = x^3 - 8$

$$(x - 2)(x^2 + 2x + 4)$$

$$x = 2, -1 \pm i\sqrt{3}$$

$$\frac{-2 \pm \sqrt{2^2 - 4(1)(4)}}{2}$$

$$\frac{-2 \pm \sqrt{4 - 16}}{2}$$

$$\frac{-2 \pm 2i\sqrt{3}}{2}$$