

Factoring and Finding Zeroes of Polynomials

Date _____ Period _____

CLASS EXAMPLE: Factor each completely.

1) $21x^3 + 6x^2 - 15x$

Factor each completely.

2) $2x^2 - 2x$

3) $30m^2 + 12m$

4) $9n^2 - 65n - 56$

5) $18k^3 + 54k^2 + 28k$

6) $25x^2 - 135x + 140$

7) $14b^2 + 80b - 24$

CLASS EXAMPLE: Factor each completely.

8) $336v^3 - 126v^2 + 48v - 18$

Factor each completely.

9) $4a^3 + 7a^2 + 28a + 49$

10) $24x^3 + 6x^2 + 4x + 1$

11) $8r^3 - 4r^2 - 2r + 1$

12) $4m^3 - 28m^2 + m - 7$

13) $105k^3 - 75k^2 - 126k + 90$

14) $v^3 + 8v^2 - 5v - 40$

CLASS EXAMPLE: Factor each.

15) $y = x^8 - 5x^4 + 4$

Factor each.

16) $y = x^8 - 20x^4 + 64$

17) $y = x^8 - 26x^4 + 25$

18) $y = x^8 - 34x^4 + 225$

19) $y = x^6 - 7x^4 + 10x^2$

CLASS EXAMPLE: Find all zeros.

20) $f(x) = 4x^4 + 20x^3 - x^2 - 5x$

21) $f(x) = 5x^6 + 4x^4 - 80x^2 - 64$

Find all zeros.

22) $f(x) = 5x^3 - 12x^2 - 9x$

23) $f(x) = 5x^3 + 21x^2 - 20x$

24) $f(x) = 5x^3 + 25x^2 - 3x - 15$

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

26) $f(x) = 5x^4 - 23x^2 + 24$

27) $f(x) = 2x^4 - 7x^2 - 9$

28) $f(x) = 4x^6 + 16x^4 - 9x^2 - 36$

29) $f(x) = 2x^6 - x^4 - 2x^2 + 1$

Answers to Factoring and Finding Zeroes of Polynomials (ID: 1)

- 1) $3x(7x - 5)(x + 1)$ 3) $6m(5m + 2)$ 5) $2k(3k + 7)(3k + 2)$ 7) $2(7b - 2)(b + 6)$
 9) $(a^2 + 7)(4a + 7)$ 11) $(2r - 1)^2(2r + 1)$ 13) $3(5k^2 - 6)(7k - 5)$
 15) $y = (x - 1)(x + 1)(x^2 + 1)(x^2 - 2)(x^2 + 2)$ 17) $y = (x - 1)(x + 1)(x^2 + 1)(x^2 - 5)(x^2 + 5)$
 19) $y = x^2(x^2 - 2)(x^2 - 5)$ 21) $\left\{ \frac{2i\sqrt{5}}{5}, -\frac{2i\sqrt{5}}{5}, 2, -2, 2i, -2i \right\}$
 23) $\left\{ 0, \frac{4}{5}, -5 \right\}$ 25) $\left\{ -\frac{1}{3}, \sqrt{3}, -\sqrt{3} \right\}$ 27) $\left\{ \frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2}, i, -i \right\}$
 29) $\left\{ \frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}, 1, -1, i, -i \right\}$