

## Dividing Polynomials

**Determine if  $d(x)$  is a factor of  $f(x)$ .**

1)  $f(x) = 3x^4 + 7x^3 + 3x^2 - x - 4$   
 $d(x) = x + 2$

2)  $f(x) = 2x^3 - x^2 - 6x - 1$   
 $d(x) = x + 1$

3)  $f(x) = 4x^3 - 2x^2 + x - 3$   
 $d(x) = x - 1$

4)  $f(x) = 3x^4 - 3x^3 - 9x^2 + 5x - 2$   
 $d(x) = x - 2$

**Divide. Write your answer in fraction form.**

5)  $(2x^5 - 15x^3 - 9x^2 + 11x + 12) \div (x + 2)$

6)  $(x^4 - x^3 - 19x^2 - 3x - 19) \div (x - 5)$

7)  $(10x^4 - 4x^3 + 14x^2 - 14x - 16) \div (2x - 2)$

8)  $(9x^5 - 9x^4 - x^3 - 12x^2 + x - 11) \div (3x - 5)$

$$9) (16x^4 + 4x^3 + 2x^2 - 21x + 7) \div (4x - 1)$$

$$10) (6x^5 + 21x^4 - 14x^3 - 8x^2 + x - 6) \div (x + 4)$$

$$11) (5x^6 - 16x^5 - 11x^4 + 22x^3 + 14x^2 - 4x + 9) \div (x^2 - 4x + 2)$$

$$12) (3x^4 + 15x^3 + 3x^2 - 12x + 4) \div (x^2 + 4x - 2)$$

$$13) (4x^6 - 3x^5 + 15x^4 - 12x^3 - 4x^2 + 10) \div (4x^3 - 3x^2 - x)$$

$$14) (x^4 - 17x^2 + 4x - 2) \div (x^2 + 4x - 1)$$

## Dividing Polynomials

**Determine if  $d(x)$  is a factor of  $f(x)$ .**

$$1) \begin{aligned} f(x) &= 3x^4 + 7x^3 + 3x^2 - x - 4 \\ d(x) &= x + 2 \end{aligned}$$

No

$$2) \begin{aligned} f(x) &= 2x^3 - x^2 - 6x - 1 \\ d(x) &= x + 1 \end{aligned}$$

No

$$3) \begin{aligned} f(x) &= 4x^3 - 2x^2 + x - 3 \\ d(x) &= x - 1 \end{aligned}$$

Yes

$$4) \begin{aligned} f(x) &= 3x^4 - 3x^3 - 9x^2 + 5x - 2 \\ d(x) &= x - 2 \end{aligned}$$

No

**Divide. Write your answer in fraction form.**

$$5) (2x^5 - 15x^3 - 9x^2 + 11x + 12) \div (x + 2)$$

$$2x^4 - 4x^3 - 7x^2 + 5x + 1 + \frac{10}{x + 2}$$

$$6) (x^4 - x^3 - 19x^2 - 3x - 19) \div (x - 5)$$

$$x^3 + 4x^2 + x + 2 - \frac{9}{x - 5}$$

$$7) (10x^4 - 4x^3 + 14x^2 - 14x - 16) \div (2x - 2)$$

$$5x^3 + 3x^2 + 10x + 3 - \frac{10}{2x - 2}$$

$$8) (9x^5 - 9x^4 - x^3 - 12x^2 + x - 11) \div (3x - 5)$$

$$3x^4 + 2x^3 + 3x^2 + x + 2 - \frac{1}{3x - 5}$$

$$9) (16x^4 + 4x^3 + 2x^2 - 21x + 7) \div (4x - 1)$$

$$4x^3 + 2x^2 + x - 5 + \frac{2}{4x - 1}$$

$$10) (6x^5 + 21x^4 - 14x^3 - 8x^2 + x - 6) \div (x + 4)$$

$$6x^4 - 3x^3 - 2x^2 + 1 - \frac{10}{x + 4}$$

$$11) (5x^6 - 16x^5 - 11x^4 + 22x^3 + 14x^2 - 4x + 9) \div (x^2 - 4x + 2)$$

$$5x^4 + 4x^3 - 5x^2 - 6x + \frac{8x + 9}{x^2 - 4x + 2}$$

$$12) (3x^4 + 15x^3 + 3x^2 - 12x + 4) \div (x^2 + 4x - 2)$$

$$3x^2 + 3x - 3 + \frac{6x - 2}{x^2 + 4x - 2}$$

$$13) (4x^6 - 3x^5 + 15x^4 - 12x^3 - 4x^2 + 10) \div (4x^3 - 3x^2 - x)$$

$$x^3 + 4x + \frac{10}{4x^3 - 3x^2 - x}$$

$$14) (x^4 - 17x^2 + 4x - 2) \div (x^2 + 4x - 1)$$

$$x^2 - 4x - \frac{2}{x^2 + 4x - 1}$$