Name: _____

Sec. 12.3: Divide Polynomials

Do you remember the days of doing long division? Sometimes things work out very nicely:

$582 \div 3$:

Sometimes things don't go so smoothly, and you end up with a remainder:

$481 \div 3$:

We can also divide polynomials using long division. Sometimes it works out very nicely, but often we end up with remainders.

Examples

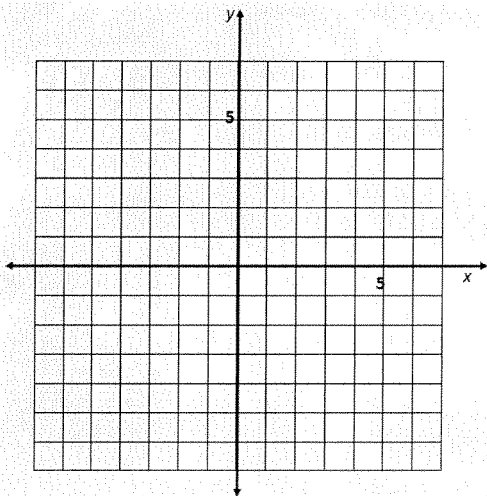| Divide.	
1. $(20x^4 + 20x^3 + 8x^2) \div 4x^2$	2. $(16h^3 + 2h^2 + 3h) \div 4h$

3. $(r^2 - 3r - 10) \div (r - 5)$	4. $(y^3 + y^2 - 7y - 3) \div (y + 3)$
5. $(k^3 - 10k^2 + 79) \div (k - 9)$	6. $(107 + 70g + g^3 + 16g^2) \div (g + 10)$

7. Graph $f(x) = \dfrac{2x - 4}{x + 3}$

Algebra 1   Name_____

Sec. 12.3 Practice Problems

Divide.

1) $\left(x^2 + 13x + 40\right) \div \left(x + 5\right)$

2) $\left(p^2 - 14p + 40\right) \div \left(p - 4\right)$

3) $\left(n^2 - 7n - 30\right) \div \left(n + 3\right)$

4) $\left(5x^2 - 21x + 18\right) \div \left(x - 3\right)$

5) $\left(k^2 - 12k + 32\right) \div \left(k - 8\right)$

6) $\left(x^2 - 13x + 42\right) \div \left(x - 6\right)$

7) $\left(n^2 - n + 1\right) \div \left(n + 2\right)$

8) $\left(r^2 + 5r - 18\right) \div \left(r + 8\right)$

9) $\left(x^2 - 2x - 14\right) \div \left(x + 4\right)$

10) $\left(m^2 + 6m - 13\right) \div \left(m - 2\right)$

11) $\left(x^3 + 4x^2 + 11x + 24\right) \div \left(x + 3\right)$

12) $\left(6b^3 + 69b^2 + 82b - 80\right) \div \left(b + 10\right)$

13) $\left(v^3 + 10v^2 + 16v - 48\right) \div \left(v + 6\right)$

14) $\left(n^3 + n^2 - 28n + 32\right) \div \left(n - 4\right)$

15) $\left(k^3 - 5k^2 - 60k - 59\right) \div \left(k + 5\right)$

16) $\left(a^3 + 9a^2 + 2a - 57\right) \div \left(a + 8\right)$

17) $\left(n^3 - 18n^2 + 72n + 72\right) \div \left(n - 9\right)$

18) $\left(p^3 + 2p^2 - 69p + 32\right) \div \left(p - 7\right)$

19) Graph $y = \dfrac{x + 3}{x - 2}$.
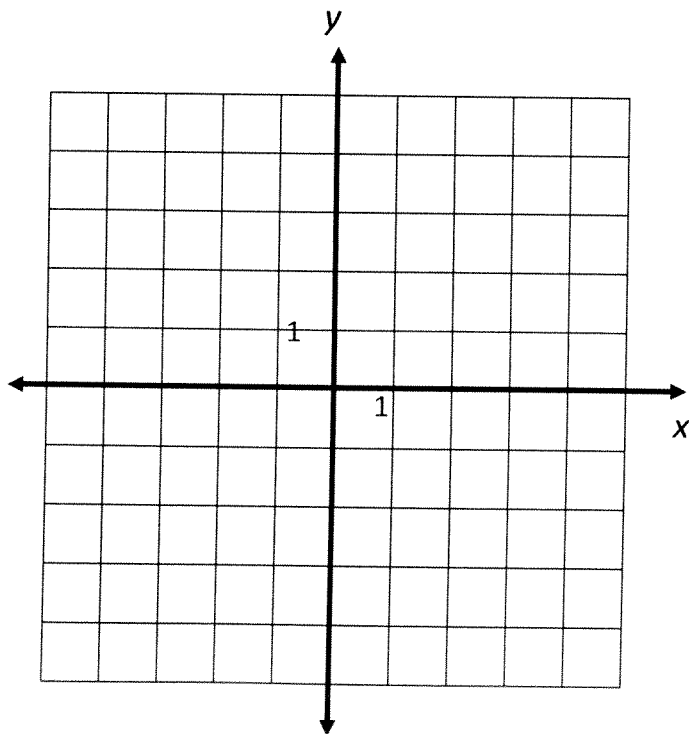
Answers to Sec. 12.3 Practice Problems

1) $x + 8$

2) $p - 10$

3) $n - 10$

4) $5x - 6$

5) $k - 4$

6) $x - 7$

7) $n - 3 + \dfrac{7}{n+2}$

8) $r - 3 + \dfrac{6}{r+8}$

9) $x - 6 + \dfrac{10}{x+4}$

10) $m + 8 + \dfrac{3}{m-2}$

11) $x^2 + x + 8$

12) $6b^2 + 9b - 8$

13) $v^2 + 4v - 8$

14) $n^2 + 5n - 8$

15) $k^2 - 10k - 10 - \dfrac{9}{k+5}$

16) $a^2 + a - 6 - \dfrac{9}{a+8}$

17) $n^2 - 9n - 9 - \dfrac{9}{n-9}$

18) $p^2 + 9p - 6 - \dfrac{10}{p-7}$

19) See graph.