

**SHOW ALL WORK ON SEPARATE PAPER** – Due \_\_\_\_\_

Simplify each expression.

1. 
$$\frac{\frac{25}{36} + \frac{25}{36}}{\frac{x}{6}}$$

2. 
$$\frac{\frac{x^2}{x-6} + \frac{x}{x-6}}{x^2}$$

Divide.

3.  $(k^3 + 9k^2 + 23k + 21) \div (k + 3)$

4.  $(6n^3 - 29n^2 + 28n - 33) \div (n - 4)$

Simplify each expression.

5. 
$$\frac{10p}{30p^2 + 20p} \div \frac{6p}{18p + 12}$$

6. 
$$\frac{n-10}{2n+18} \div \frac{1}{n+9}$$

Solve each equation by factoring.

7.  $5x^2 + 8x = 4$

8.  $7x^2 - 4x = 0$

Simplify. Your answer should contain only positive exponents.

9.  $yx^4 \cdot 3x^4y^{-3}$

10.  $(a^3)^{-2}$

11. 
$$\frac{4a^{-2}b^{-4}}{2a^4b^{-2}}$$

12. 
$$\frac{4x^2y^4}{2x^{-2}y^{-3}}$$

Simplify. Your answer should contain positive exponents with no fractional exponents in the denominator.

13. 
$$\frac{4x^{\frac{2}{3}}y^{\frac{3}{2}} \cdot 4x^{\frac{1}{3}}y^{\frac{4}{3}}}{2x^2y^{\frac{1}{2}}}$$

14. 
$$\frac{2x^{\frac{3}{2}}y^{\frac{1}{2}}}{3x^2y^2 \cdot 2x^{\frac{2}{3}}}$$

Evaluate each function.

15.  $p(t) = t^2 + 2$ ; find  $p(-1)$

16.  $p(x) = 5^{x+2}$ ; find  $p(1)$

17.  $p(x) = 4x - 5$ ; find  $p(6)$

18.  $h(s) = -2s^2 - 2s$ ; find  $h(7)$

19.  $g(n) = n^2 + 4n$ , find  $g(-10)$

20.  $h(x) = -3x - 5$ ; find  $h(1)$

21.  $k(n) = 2^{3n}$ ; find  $k(x - 1)$

22.  $f(n) = n + 2$ ; find  $f(n - 4)$

23.  $w(n) = 3^{n+1} + 2$ ; find  $w(-4n)$

24.  $k(a) = a^2 - a$ ; find  $k(x + h)$

Evaluate each function at  $x = -1$ .

25.  $f(x) = \frac{x^2 - 5x + 6}{x^2 - 2x}$

26.  $f(x) = \frac{4}{x^2 - 3x}$

Find each product.

27.  $(7x + 5)(x^2 + x + 7)$

28.  $(3r^2 - 2r - 5)(2r + 7)$

29.  $(-7x + 7y)(2x - 2y)$

30.  $(6m - 3n)(-m + 8n)$

Simplify each expression.

31.  $\frac{1}{p-1} \cdot \frac{9p-9}{9p}$

32.  $\frac{2k^2 - 20k}{2k - 2k^2} \cdot \frac{k-1}{8}$