

1. (2 pts each) Evaluate each of the following:

a. -5^2

b. $(-5)^2$

c. -5^3

d. $(-5)^3$

e. -5^0

f. $(-5)^0$

2. (2 pts each) Simplify each of the following and writing using positive exponents.

a. $\frac{3a^{-5}b^3}{18a^2b^{-3}}$

b. $\left(\frac{2^3x^{-1}y^5}{6^{-2}x^2y^{-1}}\right)^2$

c. $\frac{(2^3x^{-1}y^5)^3}{(6^{-2}x^2y^{-1})^{-2}}$

d. $5^{-1} - 2^{-3}$

3. (2 pts each) Write each of the following in standard notation:

a. 9.1×10^{-5}

b. 1.9×10^8

4. (2 pts each) Write each of the following in scientific notation:

a. 0.0000003278

b. 1,333,564

5. (2 pts each) Simplify. Express final answer in scientific notation.

a. $\frac{1.2 \times 10^{22}}{3 \times 10^{-3}}$

b. $(5.3 \times 10^6)(8 \times 10^{-3})$

6. (2 pts each) Let $P(x) = 2x^2 - 3x + 7$. Find each of the following:

a. $P(2)$

b. $P\left(\frac{1}{3}\right)$

7. (2 pts each) Perform the indicated operations:

a. $(x + 5)(x - 7)$

b. $(x + 2)(x^2 - 5x + 4)$

c. $(3x + 2)(3x - 2)$

d. $(3x - 2)^2$

8. (2 pts each) Factor out the GCF:

a. $5x^5 - 15x^4 + 20x^2$

b. $6x(4x + 3) - 5(4x + 3)$

9. (5 pts each) Factor by grouping:

a. $24x^2 + 18x - 20x - 15$

b. $10x^2 - 20x - x + 2$

10. (5 pts each) Factor each trinomial.

a. $x^2 + 3x - 18$

b. $12x^2 + 4x - 21$

c. $x^2 - 8x + 16$

11. (4 pts each) Factor each binomial.

a. $x^2 - 16$

b. $150x^2 - 96$

c. $3y^3 + 81$

12. (5 pts each) Solve each of the following equations by factoring.

a. $x^2 + 3x - 18 = 0$

b. $(2x + 1)(x + 1) = 3$

13. (5 pts) Amanda can clean the windows of Benedetto's trophy home in 12 hours. Steve, a much lazier window washer, can do the job in 15 hours. Amanda starts at 6 a.m. Steve doesn't show up until 9:00 a.m. to help. What time will the job be finished?