

1. **5.1** Write the number in scientific notation:

a. 321,547.28

b. 0.000003214

2. **5.1** Write the number in decimal form:

a.  $-9.775 \times 10^{-6}$

b.  $-9.775 \times 10^6$

3. **5.2** Simplify the following. Assume that the variables in the exponents are all integers and that none of the variables are zero.

a.  $\left(\frac{3z^{-3}}{y}\right)^2 \left(\frac{9y^{-3}}{z^{-6}}\right)^{-2}$

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

4. **5.3** Perform the indicated operations:

a.  $(5x^2 - 3x + 7) - (-4x^3 + 2x^2 - 13x + 5)$

b.  $\left(\frac{3}{16}x^2 + \frac{5}{8}x - \frac{1}{2}\right) - \left(\frac{5}{8}x^2 - \frac{3}{16}x + \frac{1}{16}\right)$

5. **5.3-and-before** Sketch the graph of  $g(x) = -(x-3)^2 - 5$

6. **5.4** Multiply:

a.  $(3x+5)(4x+6)$

b.  $(x^2 + 2x + 3)(x - 2)$

c.  $(3x+4)(3x-4)$

d.  $(3x+4)^2$

e.  $[(2x-3)+4][(2x-3)-4]$

7. **5.5** Factor out the greatest common factor:

a.  $3x^3y - 21x^2y^3$

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

c.  $7x(2x-3) - 2x + 3$