

# [polynomials]

1. Simplify the following:

a.  $(5x^4y^5)(2xy^2)$   
 b.  $(5x - 2)(4x - 3)$

c.  $(2x^2 + 3x - 4)(3x^2 - 4x + 2)$   
 d.  $3(x - 2y)^2 - 2(x - 4y)^2$

2. Factor the following:

a.  $a^2 - 10a - 24$   
 b.  $4a^5c^2 + 8a^3c^3 - 12a^2c^6$   
 c.  $6x^2 - 12xy + 10y - 5x$   
 d.  $25b^2 - 81$   
 e.  $9x^2 - 30xy + 25y^2$   
 f.  $(2x - 3)^2 - 25$

g.  $12a^2 + 5a - 2$   
 h.  $x^4 + x^2 - 20$   
 i.  $3b^2 - 3b + 18$   
 j.  $7x^2(a + 3y) - 28y^2(a + 3y)$   
 k.  $x^4y^2 + 3x^2y - 28$   
 l.  $20x^2y + 20xy - 240y$

3. For what value(s) is the rational variable expression undefined?

a.  $\frac{(3x^3-2x)}{(3x+13)}$   
 b.  $\frac{x-2}{2x^3-8x}$

4. Simplify the following:

a.  $\left(\frac{2y^4}{5x}\right)\left(\frac{10x^2}{4y^3}\right)$   
 b.  $\frac{(x^2-4x+3)}{(x^2+x-12)} + \frac{(x^2+x-6)}{(x^2+2x-8)}$

c.  $\frac{4}{x+4} - \frac{3}{x-3}$   
 d.  $\frac{4a}{7b^3} + \frac{3}{21ab}$   
 e.  $\frac{3(x-1)}{a^25a+6} - \frac{2}{a^2-6a+8}$

5. Factor

$$4ax^4 - 12ax^3 - 64ax^2 + 192ax$$