

2.1.1 Evaluate each of the following when $r = 3$.

(a) $r - 7$

(c) $\sqrt{r^2 + (r + 1)^2}$

2.1.2 Evaluate each of the following when $s = -4$.

(c) $-s^2 + 4s - 12$

Problem 2.6: Simplify each of the following:

$$(c) \quad (5t^{-3})\left(\frac{3t^4}{20t^8}\right)(8t^{12})$$

CHAPTER 2. X MARKS THE SPOT

2.2.8

(a) Suppose t is positive. Simplify $\sqrt{96t^6}$.

(c) Simplify $\sqrt[3]{27p^5} - \frac{2\sqrt[3]{p^8}}{p}$.

2.3.2 Simplify each of the following:

(c) $3(t + 7) - t(t + 9)$

2.3.3 Factor each of the following:

(b) $7x^2 - 30x$

2.4.5 Write $\frac{3x}{x(x-1)} + \frac{2}{x}$ as a single fraction.

2.18 Evaluate each of the following when $t = -7$.

(d) $2t^2 - 3t/7 + 8$

2.21 Simplify each of the following:

(f) $(4r^5)^{1/2}(81r^7)^{-1/2}$

2.27 Simplify the expression $2(t^2 - 4t + 1) - t(t + 7)$.

2.31 Factor the following:

(a) $2x(x^2 - 3) + 5(x^2 - 3)$

(b) $3(2d + 7) - 5d(2d + 7)$

2.32 Simplify each of the following fractions:

(b) $\frac{18 - 36x}{2 - 4x}$

2.35 Write $\frac{1}{z^2 + 1} - \frac{1}{z^2}$ as a single fraction.

2.36 Factor the expression $2r^2(r^2 + 1) - 8r(r^2 + 1)$ as completely as you can.

2.38 What number must be in the blank in the expression

$$3(x + 7) - \underline{\hspace{1cm}}(2x + 9)$$

if the expression is the same for all values of x ?

2.39 Factor the expression $2r(r - 7) + 8r - 56$. **Hints:** 214

2.40

(a) Expand the product $x(x + 2)$.

(b) Expand the product $(x + 1)(x + 2)$. **Hints:** 14

(c)★ Factor the expression $x^2 + 5x + 4$ by finding the numbers that correctly fill in the blanks below:

$$(x + \underline{\hspace{1cm}})(x + \underline{\hspace{1cm}}).$$

2.41★ Alice, Bob, and Carol each think of an expression that is a fraction with 1 as the numerator and a constant integer times some power of x as the denominator. The simplest common denominator of Alice's and Bob's expressions is $4x^2$. The simplest common denominator of Bob's and Carol's expressions is $12x^3$. The simplest common denominator of Alice and Carol's expressions is $6x^3$.

Find all possible expressions that could be Carol's expression. **Hints:** 49