CHAPTER 3

3-1. a. $x = 3$; b. $t = -2$. c. $y = 3/2$; d. $n = 1/2$; e. $x = 4/17$

3-3. a. $x = \pm 5$; b. $x = -5, x = 2$; c. $x = -1, x = -2/3$;
d. $x = 0.902, x = -0.277$; e. $y = 0.2434, y = -1.6434$

3-5. a. $x = 3, y = -1$; b. $x = 1.4545, y = 0.1818$; c. $x = -1, y = 3$

3-7. a. 198 m²; b. 460 ft²; c. 338 m²;
d. 6760 ft²; e. 2826 m²; f. 30 510 ft²

3-9. a. opp = 259.55 ft, adj = 307.46 ft, $B = 49°49'47''$
b. hyp = 383.10 m, adj = 178.94 m, $B = 27°50'45''$
c. hyp = 447.60 ft, opp = 265.42 ft, $B = 53°37'50''$
d. $A = 67°59'05''$, $B = 22°00'55''$, adj = 160.55 m
e. $A = 47°49'24''$, $B = 42°10'36''$, opp = 303.33 ft
f. $A = 53°42'07''$, $B = 36°17'52''$, hyp = 466.31 m

3-11. a. $C = 57°46'43''$, $a = 479.88$ ft, $c = 469.56$ ft
b. $C = 120°03'21''$, $a = 188.65$ m, $b = 215.05$ m
c. $B = 81°20'42''$, $C = 83°17'24''$, $c = 541.30$ ft, or
$B = 118°39'38''$, $C = 25°58'46''$, $c = 238.76$ ft
d. $B = 48°18'44''$, $C = 87°14'03''$, $c = 365.33$ m
e. $B = 73°32'13''$, $C = 85°17'34''$, $a = 290.93$ ft
f. $B = 82°17'43''$, $C = 25°51'48''$, $a = 398.50$ m
g. $A = 35°12'55''$, $B = 46°20'00''$, $C = 98°27'05''$

3-13. Building height = 20.98 m

3-15. 73°18'03"; 106°41'57"; 104.40 m

3-17. Base = 50.36 ft

3-19. $AB = 422.62$ ft; $BC = 875.94$ ft; $CD = 1032.69$ ft

3-21. 30°06'30"; 122°02'58"; 27°50'32"

3-23. $XY = 205$ m

3-25. $AB = 415.66$ ft

3-27. a. $\tan 30 = 0.5774$
$\sin 30 / \cos 30 = 0.500 / 0.866 = 0.5774$
b. $\sin^2 30 + \cos^2 30 = 0.5^2 + 0.866^2 = 0.25 + 0.75 = 1$
c. $\sin (2 \times 30) = \sin 60 = 0.866$
$2 \times \sin 30 \times \cos 30 = 2 \times 0.5 \times 0.866 = 0.866$
d. $\tan (30/2) = \tan 15 = 0.268$
$(1 - \cos 30)/\sin 30 = 0.268$

3-29. $CD = \sqrt{45^2 + 60^2} = 75$

3-31. $y = 2x + 20$

3-33. $4x - 3y = 30$

3-35. Intersection point: (4, 4)

3-37. $x^2 + y^2 = 25$

3-39. $x^2 - x^2 = 25$
$2x^2 = 25$
$x^2 = 12.5$
$x = \pm 3.5356$
Intersection points: (3.5355, 3.5355) and (−3.5355, −3.5355)