Homework #51 **Answers**

From Houghton-Mifflin Precalculus 3rd Edition

p352:

For each the standard right triangles with typical Pythagorean triples is used unless otherwise noted.

38) 4/5

39) 5/4

40) 7/25

41) -13/12

42) If the opposite leg is 3 and the adjacent leg is 5 then the hypotenuse, n is: $3^2 + 5^2 = n^2$

$9 + 25 = n^2$

$34 = n^2 \quad n = \sqrt{34}$ Ans: $\sqrt{34}/5$

43) If the opposite leg is 3 and the hypotenuse is 8 then the adjacent leg, n is: $3^2 + n^2 = 8^2$

$9 + n^2 = 64$

$n^2 = 55 \quad n = \sqrt{55}$ Ans: $-3/\sqrt{55}$

48) For $\angle A$ the adjacent leg is x and the hypotenuse is 1.

For the opposite leg, n: $x^2 + n^2 = 1^2$

$n = \sqrt{1 - x^2}$

$\sin(\text{Arc cos } x) = \sqrt{1 - x^2}$

49) For $\angle A$ the opposite leg is x - 1 and the hypotenuse is 1.

For the adjacent side, n: $(x - 1)^2 + n^2 = 1^2$

$n = \sqrt{1 - (x - 1)^2}$

$= \sqrt{-x^2 + 2x}$

$\sec(\text{Arc sin } (x - 1)) = \dfrac{1}{\sqrt{-x^2 + 2x}}$.

50) For $\angle A$ the adjacent leg is x and the is hypotenuse 5.

For the opposite leg, n: $x^2 + n^2 = 5^2$

$n = \sqrt{25 - x^2}$

$\tan(\text{Arc cos } (x/5)) = \dfrac{\sqrt{25 - x^2}}{x}$

51) For $\angle A$ the adjacent leg is x and the hypotenuse is 1.

For the opposite leg, n: $x^2 + n^2 = 1^2$

$n = \sqrt{1 - x^2}$

$\sin(\text{Arc cos } x) = \sqrt{1 - x^2}$

51) For this we just need the reciprocal:

$\cot(\text{Arc tan } (1/x)) = x$