King Fahd University of Petroleum and Minerals
Prep-Year Math Program
Math (001)-Term (131)
Recitation (1.1 and 1.2)

Question1:

Determine whether each of the following equations is an identity, a conditional equation or a contradiction.

(a) $\dfrac{x-5}{3} - 2x = 2 - \dfrac{x-5}{6}$ $\qquad$ (b) $(x-2)^2 = x^2 - 4$

(c) $\dfrac{4x+8}{4} = x + 8$ $\qquad$ (d) $(2x-3)^2 - 3x = (4x-3)(x-3)$

Solution:

a) $SS = \{-3\}$ Then the given equation is a conditional equation.

b) $SS = \{2\}$ Then the given equation is a conditional equation.

c) $SS = \varnothing$ Contradiction equation.

d) $SS = (-\infty, \infty)$ is an identity. Because:

Question2

Solve the following equations for the indicated variable:

(a) $z = y\left(1 + \dfrac{m}{x}\right)$ for x

(b) $y = \dfrac{a+x}{3-ax}$ for x

Solution:

a) $x = \dfrac{ym}{z-y}$ $\qquad$ **b)** $x = \dfrac{3y-a}{ay+1}$

Question3

A triangle has a perimeter 15 cm's. Each of the two equal sides of the triangle is one-third the length of the third side. Then find the product of the lengths of **all** side of the triangle

Solution:

$\dfrac{1}{3}x + \dfrac{1}{3}x + x = 15$

$x + x + 3x = 3(15)$

$5x = 45 \implies \boxed{x = 9}$

$\implies \dfrac{1}{3}x = \dfrac{1}{3}(9) = 3$
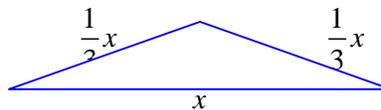
The produc of lenghts $= (9)(3)(3) = 81$

Question4

If the length of a rectangle is 6cm.more than the width and the perimeter of the rectangle is 60 cm.then the length and the width of the rectangle are:

(a) 18 and 12   (b) 30 and 24   (c) 36 and 24

(d) 36 and 30   (e) 12 and 6

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Solution:

$$P = 2(w + 6) + 2w$$
$$P = 2w + 12 + 2w$$
$$60 = 4w + 12$$
$$15 = w + 3$$
$$w = 12 \text{ cm}$$
$$L = w + 6 = 18 \text{ cm}$$

$L = w + 6$

w
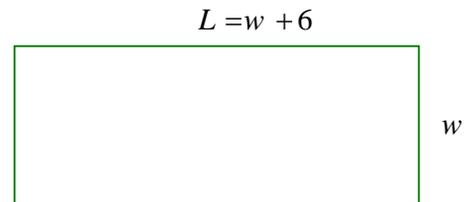
Question5

If the equation $2\left[5(x-3)+m\right] = (m+4)x - 18$ is an identity, then m is

(a)   6   (b)   3   (c)   −4

(d)   −7   (e)   −18