Name: Key TA: _____

Math 11 Pre-Calculus LG 11 Ver A

1. Solve.

a) $\frac{6}{t}+\frac{t}{2}=4$

$2t$

$12+t^2=8t$

$t^2-8t+12=0$

$(t-6)(t-2)=0$

$t=2,6$

b) $\frac{x+2}{3}+\frac{x-4}{4}=2$

12

$4(x+2)+3(x-4)=24$

$4x+8+3x-12=24$

$7x-28=0$

$7(x-4)=0$

$x=4$

c) $\frac{x-2}{2x+1}=\frac{1}{2}+\frac{x-3}{2x}$

$2x(2x+1)$

$2x(x-2)=2x(2x+1)+(x-3)(2x+1)$

$2x^2-4x=2x^2+x+2x^2-5x-3$

$-2x^2+4x \quad -2x^2+4x$

$0=2x^2-3$

$x^2=\frac{3}{2}$

$x=\pm\sqrt{\frac{3}{2}}$

d) $\frac{9}{w-3}-\frac{4}{w-6}=\frac{18}{w^2-9w+18}$

$(w-6)(w-3)$

$9(w-6)-4(w-3)=18$

$9w-54-4w+12=18$

$5w-60=0$

$5(w-12)=0$

$w=12$

2. Alice is in a 20-km race. She always runs the first half at an average speed of 2 km/h faster than the second half.

a) Let x represent her speed in the first half. Determine a simplified expression in terms of x for the total time needed to run the race. Remember $time = \frac{distance}{speed}$.

First Half

speed $x+2$

distance 10 km

$t = \frac{10}{x+2}$

Second Half

speed x

distance 10 km

$t = \frac{10}{x}$

$t = \frac{d}{s}$

Total Time $= \frac{10}{x+2} + \frac{10}{x}$

$T = \frac{10x + 10(x+2)}{x(x+2)}$

$$T = \frac{20x+20}{x(x+2)}$$

b) If Alice runs the first half at 10 km/h, how long will it take her to run the race, to the nearest tenth of an hour?

$x+2 = 10$

$x = 8$

$T = \frac{20(8)+20}{8(8+2)} = \frac{180}{80}$

$T = 2.25$ hrs.

$T = 2.3$ hrs.