

1.) $x = 5 \cos 30^\circ$ $5(\frac{\sqrt{3}}{2}) = 4.33$ $(4.33, 2.5)$
 $y = 5 \sin 30^\circ$ $5(\frac{1}{2}) = 2.5$

2.) plug in #

a.) $t_2 = 2 + 2(6+1) = 16$ no
 b.) $t_2 = (6+1)(2-2) = 0$ no
 c.) $t_2 = 2(6+2) - (2+2) = 16 - 4 = 12$ $t_3 = 2(12+2) - (3+2) = 28 - 5 = 23$
 d.) $t_2 = 6 + 2(2+1) = 12$ $t_3 = 12 + 2(3+1) = 12 + 8 = 20$

3.) 1) graph
 2) solve or

$p + q = 5$
 $\frac{1}{p} + \frac{1}{q} = 8$ $p = 5 - q$

(B)

$\frac{1}{5-q} + \frac{1}{q} = 8$

$\frac{q + 5 - q}{q(5-q)} = 8 = \frac{5}{q(5-q)} = 8$

$\frac{5}{5q - q^2} = \frac{8}{1}$
 $5 = 40q - 8q^2$
 $8q^2 - 40q + 5 = 0$

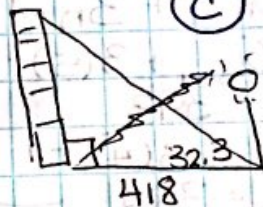
4.) $A = Pe^{rt}$

$25,000 = \frac{6,000}{6000} e^{.06t}$

$4.17 = e^{.06t}$
 $\ln 4.17 = 0.06t$
 $t = 23.798$

5.)

(B)



$\tan 32.3 = \frac{x}{418}$
 $x = 264.25 \text{ ft}$

6.) $t(x) = -x$
 $P(x) = 10x + 2$

$P(T(3)) - T(P(3))$
 $P(-3) - T(32)$
 $10(-3) + 2 - (-32)$
 $-30 + 2 + 32 = 4$

(B)

7.) $f(x) = \begin{cases} cx + 1 & x \leq 2 \\ cx^2 - 1 & x > 2 \end{cases}$

(A)

1st eq
 c) $-2(2) + 1 = -3$
 B) $-1(2) + 1 = -1$
 a) $1(2) + 1 = 3$
 b) $4(2) + 1 = 9$

and eq
 $-2(a)^2 - 1 = -9 \times$
 $-1(2)^2 - 1 = -5 \times$
 $2^2 - 1 = 3 \checkmark$

8) $(4, 9)$ Q1
 (A) (C)

$r^2 = 4^2 + 9^2 = \sqrt{97}$
 $\tan \theta = 9/4 \quad \theta = 66^\circ$

9) Geometric $r=3$

(C) $S_n = \frac{a_1(1-r^n)}{1-r}$ $3280 = \frac{1(1-3^n)}{-2}$
 $n=8$ $-6560 = 1-3^n$
 $+6561 = +3^n$
 $\log_3(6561) = n$
 Write out terms??
 would work

10) $a_1=2 \quad S=6$ $S = \frac{a_1}{1-r}$ $6 = \frac{2}{1-r}$
 (A) (C) $r = 2/3$

11) $r = \frac{3\pi}{4} = \frac{3\pi}{4\pi} \quad r = 3/4 \rightarrow \text{Con}$

(B) $S = \frac{\pi}{1-3/4} = \frac{\pi}{1/4} = 4\pi$

12) $a_n = a_{n-1} + 3n - 1$ work backwards

$407 = a_5 + 3(5) - 1$
 $a_4 = 393$
 $393 = a_3 + 3(4) - 1$
 $a_3 = 382$
 $382 = a_2 + 3(3) - 1$
 $a_2 = 374$
 $374 = a_1 + 3(2) - 1$
 $a_1 = 369$

13) x-unt $y=0$ y-unt $x=0$

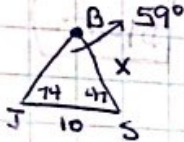
x-unt: $x+8 = 2(0+3)^2$
 $x+8 = 18$
 $x = 10$
 y-unt: $0+8 = 2(y+3)^2$
 $4 = (y+3)^2$
 $-3 \pm 2 = y < -5 > \text{diff } 4$

(A)

$$\begin{aligned}
 x(x-1) + 3x &= x+2 \\
 x^2 - x + 3x &= x+2 \\
 x^2 + x - 2 &= 0 \\
 x &= -2, x \\
 x &= -2
 \end{aligned}$$

15) Domain of $\tan x$
Asymptotes
@ 90° 270°
 $\pm \frac{\pi}{2}$ $\pm 3\frac{\pi}{2}$

16) (C)



$$\frac{x}{\sin 74} = \frac{10}{\sin 59}$$

$\approx 11.2m$

17) $y = \log_5(2x-1)$
Change $f(x)$ to y
then $x \leftrightarrow y$

$$\begin{aligned}
 x &= \log_5(2y-1) \\
 5^x &= 2y-1 \quad \boxed{\frac{5^x+1}{2} = y}
 \end{aligned}$$

18) *pick a big#
plug it in
 $\frac{3^{10}-1}{3^{10}} = .999983$ or
 $\frac{3^{20}-1}{3^{20}} \approx 1$

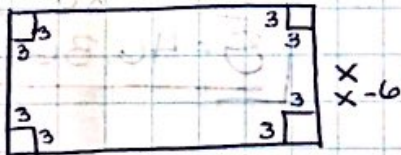
graph $\frac{3^x-1}{3^x}$

Approaches 1 the higher the #

19) $16r + 125r \cos \theta = 8$
 $16r + 125y = 8$
 $(16r)^2 = (8 - 125y)^2$
 $256r^2 = 15625y^2 - 2000y + 64$
 $256x^2 + 256y^2 = 15625y^2 - 2000y + 64$
 $-15625y^2 - 2000y + 64 = 0$
1 neg + 1 pos squared term hyperbola

20)

(B)



$$\begin{aligned}
 V &= lwh \\
 336 &= (4x-6)(x-6)(3) \\
 112 &= 4x^2 - 30x + 36 \\
 0 &= 4x^2 - 30x - 76 \\
 x &= 19/2 \quad x = 2
 \end{aligned}$$

21)

(B)

$$\begin{aligned}
 \sec \theta &= \frac{\sec \theta}{\tan \theta} \\
 \frac{1}{\cos \theta} \cdot \frac{\sec \theta}{\tan \theta} &= \frac{1}{\cos \theta} \cdot \frac{\sec \theta \cos \theta}{\sin \theta} \\
 &= 1 \\
 \text{so } 1 + \cot^2 \theta &= \csc^2 \theta \\
 \boxed{1 = \csc^2 \theta - \cot^2 \theta}
 \end{aligned}$$

22) Law of Cos
 $b^2 = 28^2 + 46^2 - 2(28)(46)\cos 80^\circ$
 $b = 49.52$
 $\times 25$
 $\boxed{\$ 1238.11}$

23) $x \leftrightarrow y$

$$\begin{aligned}
 x &= 2.5y + 1 \\
 xy &= 2.5y + 1 \\
 \text{GCF } xy - 2.5y &= 1 \\
 y(x - 2.5) &= 1 \quad \boxed{y = \frac{1}{x-2.5}}
 \end{aligned}$$

24) (B)

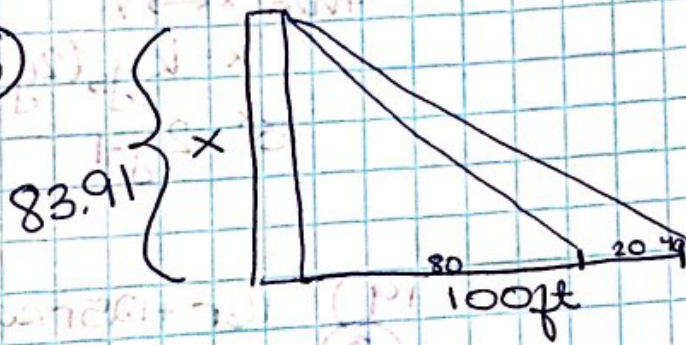
25) (B)

(24) \$50 → 1 week rental

5 (10 day) 15 Days late
8 (5 days)

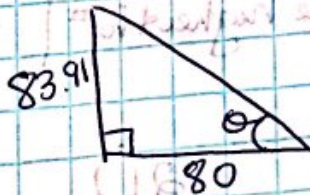
$$= 50 + 50 + 40 = \boxed{\$140}$$

(25)



$$\tan 40 = \frac{x}{100}$$

$$x = 83.91 \text{ ft}$$



$$\tan \theta = \frac{83.91}{80}$$

$$\theta = \boxed{46.36^\circ}$$