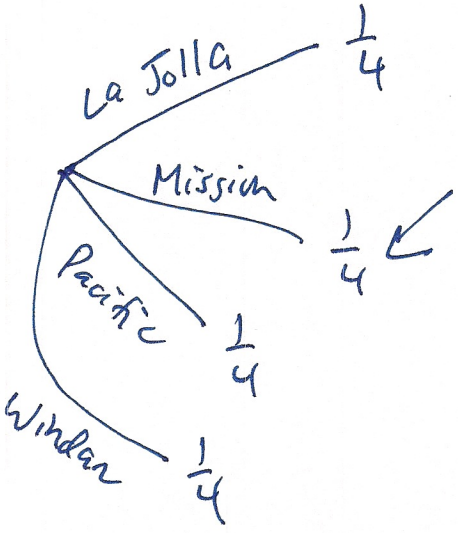
1) $$\frac{18000(.07) + 0x}{18000 + x} = .045$$

$$1260 = 810 + .045x$$

$$x = 10000$$

(A)

2)



Sara and Brad have to go surfing today, AND go to Mission Beach.

$$\frac{3}{4} \cdot \frac{1}{4} = \frac{3}{16}$$

(E)

3) $$\binom{6}{3}(3x)^3(-2y)^3 = (20)(27)(-8)x^3y^3$$

$$= -4320x^3y^3$$

(C)

4) f is 4th degree. Sum $= \frac{-5}{-2} = \frac{5}{2} = 2.5$ (D)

5) $S = \frac{7(7-3)}{2} = 14$

$A = \pi(4)^2 = 16\pi$

$N = 2$

$SAN = (14)(16\pi)(2)$

$= 448\pi$

(A)

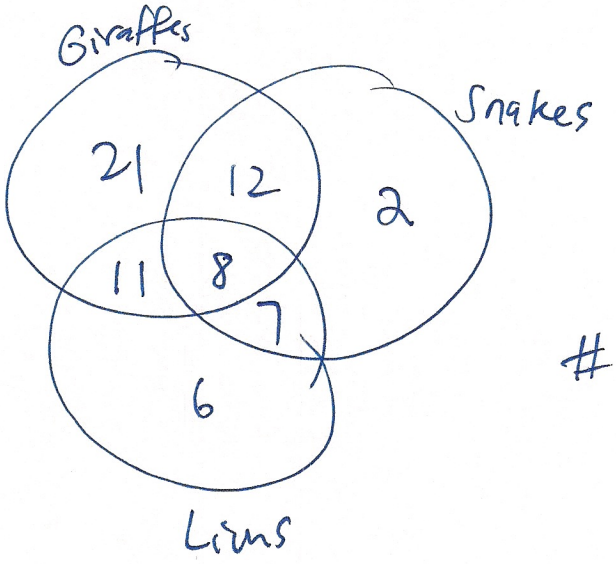
6) $D = 5$ $I = 3.5$ $E = 1$

$G = 8\pi$ $O = 180(7-2) = 900$

(E)

$D + I + E + G + O = 909.5 + 8\pi$

7)



There are 67 students who want to see at least one animal.

# of students who want to see none = $3(70) - 67 = 143$

(E)

8)

Distance	Rate	Time
2.0	8	.25
1.2	6	.20
1.7	6.8	.25
4.9	7	.70

B

9) $2(-11.2 - 7.6) - 7(6.2 + 2.6) - 2(6.7 \square 11.2)$

$= -336$

B

10) $f(f(f(f(-3))))$

2

1

0

B

-7

11) Side length = 9 $\longrightarrow$ Area = 81

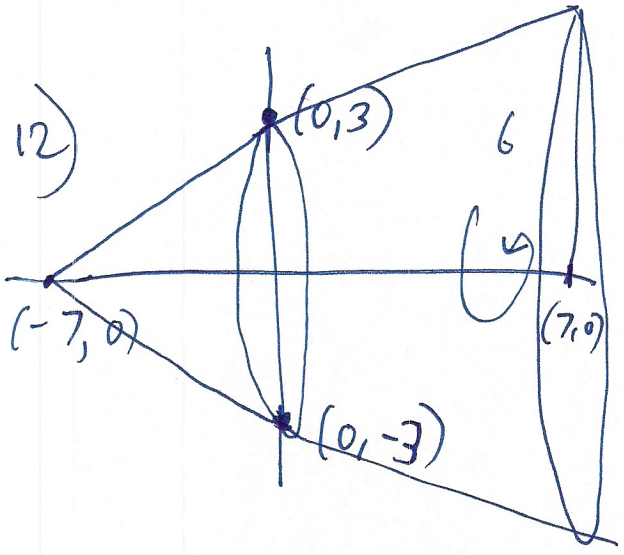
Area of White Region = $81\left(\frac{1}{4}+\frac{1}{16}+\ldots\right)$

$= 81\left(\frac{\frac{1}{4}}{1-\frac{1}{4}}\right) = 81\left(\frac{\frac{1}{4}}{\frac{3}{4}}\right) = 27$

Area of Shaded = $81-27=54$

(A)

12)



$V = \frac{\pi}{3}(3)^2(7) = 21\pi$

$V_{Big\ cone} = \frac{\pi}{3}(6)^2(14) = 168\pi$

$V_{Frustum} = 168\pi - 21\pi = 147\pi$

$\approx 147\left(\frac{22}{7}\right)$

≈ 462

(D)

13) Let $x=64$ in the expression:

$$\frac{3+2i}{-\sqrt{64}+3i} = \frac{3+2i}{-8+3i} = \frac{18+25i}{-73}$$

(D)

14) $S = \frac{3}{16} + \frac{6}{64} + \frac{9}{256} + \ldots$

$\frac{S}{4} = \quad \frac{3}{64} + \frac{6}{256} + \ldots$

$\frac{3S}{4} = \frac{3}{16} + \frac{3}{64} + \frac{3}{256} + \ldots = \frac{\frac{3}{16}}{1 - \frac{1}{4}} = \frac{1}{4}$

$\therefore \quad S = \frac{1}{3}$ (B)

15) $S = kB \rightarrow 7.5 = k(12) \rightarrow k = \frac{5}{8}$

For Carlos Quenth...

$7 = \frac{5}{8}B \longrightarrow B = 11.20$

$\frac{(10.8)(140) + G}{165} = 11.20 \longrightarrow G = 336$

$O = 6! = 720$ $\qquad \frac{G}{O} = \frac{336}{720} = \frac{7}{15}$ (E)

16) First graph is circle centered @ $(-4, 3)$ $r = 2$

Second graph is circle centered @ $(1, -9)$ $r = 4$

Min distance $= 13 - 2 - 4 = 7$ (C)

17) $\frac{1}{2_{10}}(24_5 + 120_4)(145_6) = 1235_{10} = 3413_7$ (D)

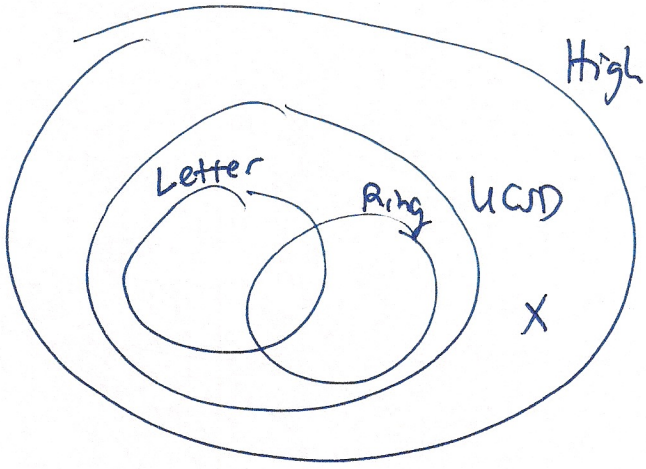
18) Situation can be modeled by $S = \frac{15B}{Q}$.

$\frac{15(7)}{5} = 21.$ (B)

19) Solutions are $x=0$ and $x=4$. (C)

Sum = 4.

20)



(D)

21) Centroid of $\triangle$ = Average of coordinates.

$$(d,e) = \left(\frac{-5+9-10}{3}, \frac{20-18+25}{3}\right) = (-2,9)$$

$$4 + \sqrt{9} = 4+3 = 7$$ (A)

22)

51 52 53 83 104 104 113

$\text{Mean} = \frac{560}{7} = 80$

(D)

23) Expected discount $= .30\left(\frac{100}{175}\right) + .35\left(\frac{50}{175}\right) + .50\left(\frac{25}{175}\right)$

$= \frac{12}{35}$

2 Men's Shirts and 1 Women's Shirt $= 2.54 + 88 = 196$

Expected Payment $= 196\left(1 - \frac{12}{35}\right) - 12 = 116.80$

(A)

24) $xyyx$ is divisible by 3 if $2x + 2y \equiv 0 \bmod 3$, or $x + y \equiv 0 \bmod 3$. This has 30 solutions.

(C)

25) Formula is $2^n + n! = a_n$.

So $a_{10} = 2^{10} + 10! = 3629824$

$3 + 6 + 2 + 9 + 8 + 2 + 4 = 34$

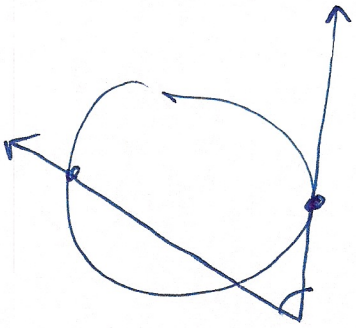
(D)

26) $\binom{10}{3}(2x)^7(3)^3 = (120)(128)(27)x^7$

$= 414720x^7$

$4+1+4+7+2+0 = 18$

27)



Radius = 8

$m\overset{\frown}{TK} = \frac{4\pi}{8} = \frac{\pi}{2} = 90°$

$m\overset{\frown}{EK} = 140°$

(B)

$m\angle KIT = \frac{140-90}{2} = 70° - 45° = 25°$

28) $\frac{2}{(\sqrt[3]{5}-\sqrt[3]{7})(\sqrt[3]{25}+\sqrt[3]{35}+\sqrt[3]{49})} \cdot \frac{\sqrt[3]{25}+\sqrt[3]{35}+\sqrt[3]{49}}{\sqrt[3]{25}+\sqrt[3]{35}+\sqrt[3]{49}} = \frac{2(\sqrt[3]{25}+\sqrt[3]{35}+\sqrt[3]{49})}{5-7}$

$= \frac{\sqrt[3]{-25}+\sqrt[3]{-35}+\sqrt[3]{-49}}{1}$

$= \frac{\sqrt[3]{-49}+\sqrt[3]{-35}+\sqrt[3]{-25}}{1}$

(A)

$M + H = -49 + 1 = -48$

29) $\frac{(x-2)^2}{1} - \frac{(y+3)^2}{25}$

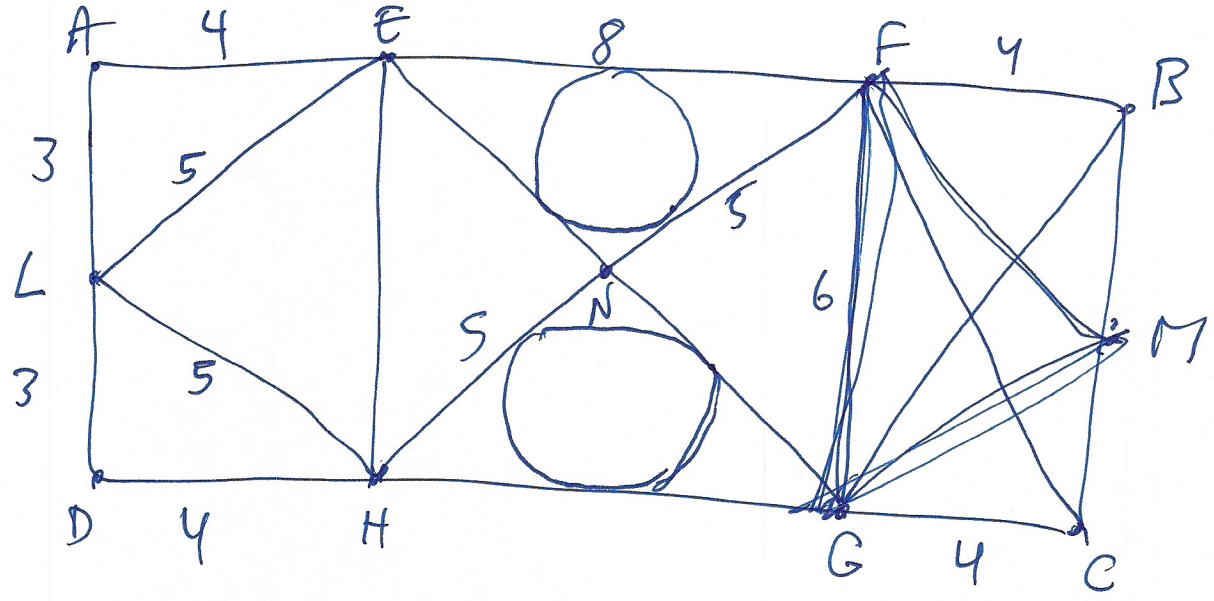
(A)

Dist between vertices = 2

Dist between Foci = $(1+\sqrt{26}) - (1-\sqrt{26}) = 2\sqrt{26}$

Difference = $2\sqrt{26} - 2$

30)



$[ELH] = \frac{1}{2}(6)(4) = 12 = [FMG]$

$[EFN] = [HNG] = \frac{1}{2}(8)(3) = 12$

Radius of circle i and $K = \frac{2A}{P} = \frac{24}{16} = \frac{3}{2}$

Radius of circles j and $L = \frac{2A}{P} = \frac{24}{18} = \frac{4}{3}$

$48 - 2\pi\left(\frac{3}{2}\right)^2 - 2\pi\left(\frac{4}{3}\right)^2 = 48 - \frac{145\pi}{18}$

(B)