

Math 114
Solutions to Practice Final
Fall 2006

- 1) B
- 2) B
- 3) A
- 4) B
- 5) B

R: My car is red

B: Your car is blue

$\sim (R \wedge B)$

$\sim R \vee \sim B$

My car isn't red and your car isn't blue

- 6) D

A = My door is open

B = Your door is closed

$\sim (A \vee B)$

$\sim A \wedge \sim B$

My door is closed and your door is open

- 7) B
- 8) D
- 9) C
- 10) A
- 11) B
- 12) C

$$(8)(3)(2) = 24(2) = 48$$

- 13) D
- 14) A

15) B

$$y = 8x - 2x^2$$

$$a = -2$$

$$b = 8$$

$$x = -\frac{b}{2a} = -\frac{8}{2(-2)} = \frac{8}{4} = 2$$

$$y = 8(2) - 2(2)^2 = 8$$

Vertex = (2,8)

16) C

$$y = -.1x^2 + 1.6x$$

$$a = -.01$$

$$b = 1.6$$

$$x = -\frac{b}{2a} = -\frac{1.6}{2(-.1)} = \frac{1.6}{.2} = 8$$

$$y = -.1(8)^2 + 1.6(8) = -6.4 + 12.8 = 6.4 \text{ feet}$$

17) C

$$18) C \log_5 317293 = 13$$

19) A

$$P = 61.8 + 36\log(x - 4) = 61.8 + 36\log(8 - 4) = 61.8 + 36\log(4) = 83.474$$

20) B

$$(.15)(\$360) = \$54.00$$

$$\$360.00 + \$54.00 = \$414.00$$

21) B

$$x - .25x = \$54.54$$

$$.75x = \$54.54$$

$$x = \$72.72$$

22) C

$$A = P(1 + RT) = \$2000(1 + .035(5)) = \$2000(1 + .175) = \$2000(1.175) = \$2350$$

23) C

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$A = \$2,500\left(1 + \frac{.037}{1}\right)^{1(4)}$$

$$A = \$2,500(1 + .0037)^4$$

$$A = \$2,500(1.0037)^4$$

$$A = \$2891.05$$

24) A

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$A = \$2,000\left(1 + \frac{.041}{12}\right)^{12(4)}$$

$$A = \$2,500(1 + .0034166)^{48}$$

$$A = \$2,500(1.0034166)^{48}$$

$$A = \$22355.77$$

25) C

15 year loan

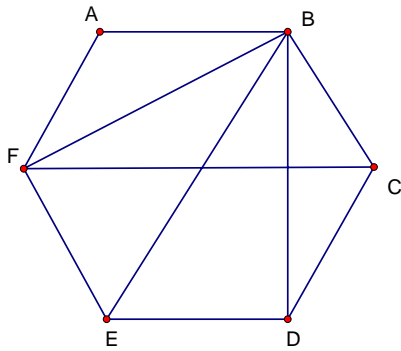
$$PMT = \left[\frac{21600\left(\frac{.045}{12}\right)}{1 + \left(1 + \frac{.045}{12}\right)^{-12(4)}} \right]$$

$$PMT = \left[\frac{21,600(.00375)}{1 - (1 + .00375)^{-48}} \right]$$

$$PMT = \left[\frac{.81}{1 - (1.00375)^{-48}} \right]$$

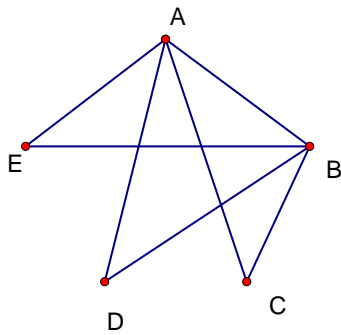
$$PMT = \frac{\$81}{.165012} = \$492.56$$

26) B

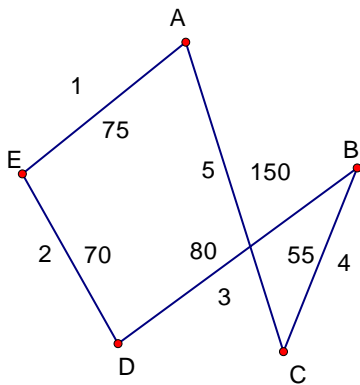
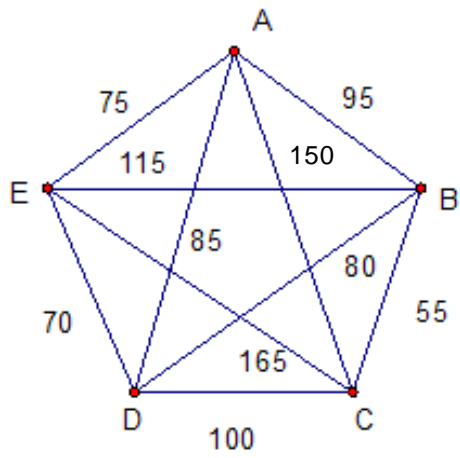


3 edges meet at D. Therefore the degree is 3

27) B or D



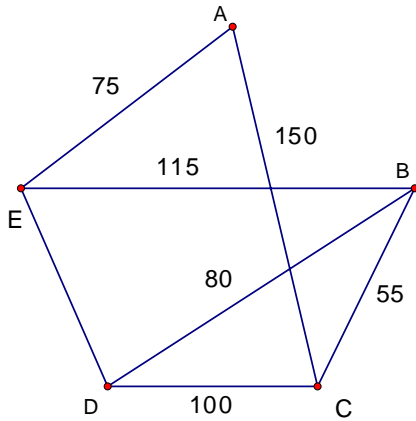
28) A



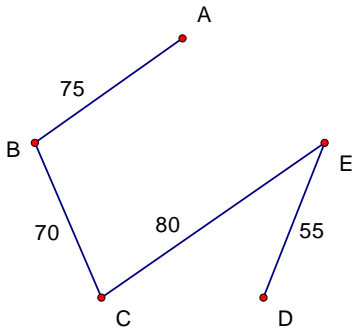
Total Dist. = 75 + 70 + 80 + 55 + 150 = 430 miles

Path: A → E → D → B → C → A

29) C



Minimum spanning tree



Total distance = $70+75+80+55 = 280$

30) C

31) B

32) C

First place votes for A: 3

Second place votes for A: 1

Third place votes for A: 6

Total points: $3(3)+1(2)+6(1) = 9+2+6 = 17$

33) D

34) A (No Winner)

$$\text{Total Voters } n = 32 + 29 + 26 + 23 + 32 + 45 = 187$$

$$\text{Majority} = \frac{n+1}{2} = \frac{187+1}{2} = \frac{188}{2} = 94 \text{ votes}$$

First-Place Votes

A: 32

B: 19+26 = 45

C: 23+32 = 55

D: 45

Thus, there is no majority winner.