

Math 114
Solutions to Practice Final
Fall 2006

- 1) B
- 2) B
- 3) A
- 4) B
- 5) B
- 6) D
- 7) B
- 8) D
- 9) C
- 10) A
- 11) B
- 12) C

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

- 13) D
- 14) A
- 15) B

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

$$a = -2$$

$$b = 8$$

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

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

$$\text{Vertex} = (2,8)$$

- 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) E Correction: Add e) $\log_5 317293 = 13$

19) A

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

20) B

$$\text{Mark Up} = 360(.15) = \$54.00$$

$$\text{Mark Up Price} = \$360 + \$54 = \$414.00$$

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

$$PMT = \$21,600 \left[\frac{\frac{.045}{12}}{1 + \left(1 + \frac{.045}{12}\right)^{-12(4)}} \right]$$

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

$$PMT = \$21,600 \left[\frac{.00375}{1 - (1.00375)^{-48}} \right]$$

$$PMT = \$21,600 \left(\frac{.00375}{.1644485} \right)$$

$$PMT = \$492.56$$

26) B

27) B or D

28) A

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

Path: A → E → D → B → C → A

29) C

30) C

31) D

32) B

33) C

| Voter | A | B | C |
|-------|----|----|----|
| 1 | 3 | 1 | 2 |
| 2 | 1 | 3 | 2 |
| 3 | 1 | 2 | 3 |
| 4 | 1 | 3 | 2 |
| 5 | 1 | 2 | 3 |
| 6 | 3 | 1 | 2 |
| 7 | 1 | 3 | 2 |
| 8 | 1 | 2 | 3 |
| 9 | 2 | 3 | 1 |
| 10 | 3 | 1 | 2 |
| Total | 17 | 21 | 22 |

A gets 17 points

34) D

35) E (No majority 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.