MA224 Even Answers

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30. Neither substitutes nor complements.
40. 12 cents.

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46. a. 36π cm^2. b. -6π cm^2.
68. 24 cents per day
70. 112 square yards

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2. (0,0) Saddle Point
4. (-2,-4) Minimum
6. (2,2) Relative Minimum
8. (1,-1) Saddle Point, (1,3) Relative Minimum

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22. First System: \$3,000, second system: \$4,500.
30. \$4,000 on development \$6,000 on promotion.
36. a. 15 b. 7 minutes of study, 4 of contemplation. 52.

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4. $y = -x + \frac{23}{4}$
6. $y = 0.512x + 1.116$
18. b. $y = 0.51x + 0.41$ c. 3.47 (billion dollars)
22. a. $y = 26.71t + 149.85$ b. 310.11 million people

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2. $f_{\max} = \frac{1}{2}$ and $f_{\min} = \frac{-1}{2}$
4. $f_{\min} = 77$
8. 1/4

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22. Radius: 1 Height: 4
24. \$40,000 Labor, \$80,000 Equipment
30. 10.63 cm$\times$ 10.63 cm$\times$ 7.08 cm. The partitions can slide anywhere desired in the interior.
32. (3.8450, -6.7243) and temperature is 30.8 degrees.

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32. $\frac{dQ(t)}{dt} = -kQ(t)$
40. $\frac{dH(t)}{dt} = kH(t)(P - H(t))$
2. $P(t) = \frac{2}{3}t^{3/2} - e^{-t} + C$
4. $y = -\frac{1}{x+C}$

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10. $y = \pm\sqrt{Cx^2 - 4}$
14. $\frac{e^{2y}}{2} = \frac{(x-2)^{10}}{10} + C$
22. $y = x^5 - x^3 - 2x + 6$
24. $y = -\frac{1}{x^4 - \frac{3}{2}} = \frac{2}{3-2x^4}$

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46a. $Q(t) = B - (B - Q_0)e^{-kt}$

46b. 78 bushels

48. $D(t) = \frac{2000}{1+3e^{-0.8066t}}$

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2. $\sum_{n=1}^{\infty} \frac{1}{n^3}$
4. $\sum_{n=1}^{\infty} \frac{n}{2n+1}$
6. $\sum_{n=1}^{\infty} \frac{(-3)^n}{n^2}$
8. $\frac{163}{60}$
10. $\frac{11}{30}$

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14. Converges to 3/2
16. Converges to 3

20. Converges to about 4.517
34. $\frac{5}{9}$

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48. 297 active trustees

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8. diverges
14. diverges
20. converges

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4. $R = \frac{1}{3}$, $-\frac{1}{3} < x < \frac{1}{3}$
6. $R = \infty$, all real x
10. $-2 < x < 2$
12. $-\frac{3}{2} < x < \frac{3}{2}$

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16. $\sum_{n=0}^{\infty} \frac{(-2)^n}{n!} x^n$
18. $\sum_{n=0}^{\infty} \frac{n+1}{n!} x^n$
20. $\sum_{n=0}^{\infty} (-1)^n (x-1)^n$
22. $\sum_{n=0}^{\infty} (x-1)^n$

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26. $\sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{2n+1}$
28. 1.94936
38. 0.09967

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2. Not a probability density function
4. not a probability density function
6. is a probability density function
10. a. 1 b. $\frac{11}{32}$ c. $\frac{5}{32}$
12. a. 1 b. 0.1813 c. 0.6065

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18. a. 0.3679 b. 0.3245

20. a. 0.0779 b. 0.1479 c. 0.7866