

CHAPTER 6, FORM A

1. $42 + \frac{5}{e}$
2. $4xy^3 + 5e^x$
3. $6x^2y^2 - 4$
4. $4y^3 + 5e^x$
5. $12xy^2$
6. $12xy^2$
7. $12x^2y$
8. Minimum $= \frac{-40}{27}$ at $\left(-\frac{4}{3}, \frac{2}{3}\right)$
9. Maximum $= 0$ at $(0, 0)$
10. (a) $y = 4x + \frac{7}{3}$
(b) \$18.33 million
11. Maximum $= -13$ at $(5, 3)$

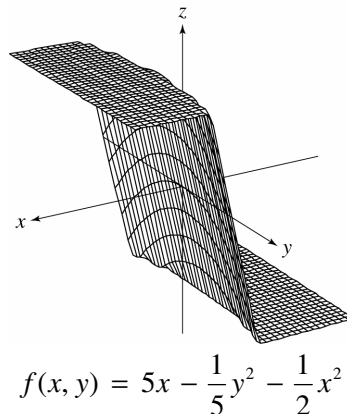
12. 135

13. \$1,400,000 for labor; \$2,800,000 for capital

$$14. f_x = \frac{-27x^2t}{(2t + 3x^3)^2};$$

$$f_t = \frac{9x^3}{(2t + 3x^3)^2}$$

15.



CHAPTER 6, FORM B

1. -115
2. $-\frac{1}{x^2} + 3y^2$
3. $6xy - 1$
4. $2x^{-3}$
5. $6y$
6. $6y$
7. $6x$
8. None
9. Minimum $= 6$ at $(0, 0)$
10. (a) $y = \frac{9}{2}x + \frac{8}{3}$
(b) \$20.67 million
11. Maximum $= -\frac{32}{7}$ at $\left(\frac{12}{7}, \frac{8}{7}\right)$

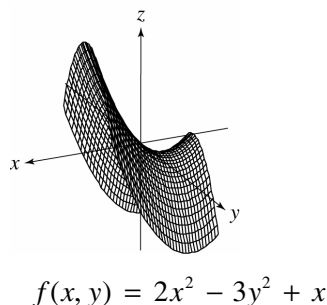
12. 32,500

13. \$210,000 for labor; \$90,000 for capital

$$14. f_x = \frac{-16x^4 + 12x^2t + 8xt}{(4x^3 + t)^2};$$

$$f_t = \frac{-4x^3 - 4x^2}{(4x^3 + t)^2}$$

15.



CHAPTER 6, FORM C

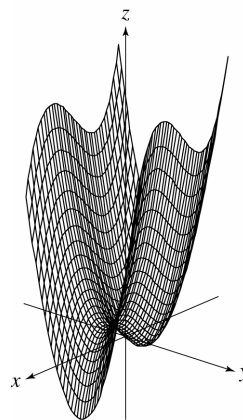
1. -7
2. $6xy - \frac{1}{x}$
3. $4 + 3x^2$
4. $6y + \frac{1}{x^2}$
5. $6x$
6. $6x$
7. 0
8. Minimum = -448 at $(24, 8)$
9. None
10. (a) $y = \frac{7}{2}x + \frac{2}{3}$
(b) \$14.67 million
11. Minimum = -600 at $(13, 2)$
12. 640

13. \$300,000 for labor; \$200,000 for capital

$$14. f_x = \frac{x^6 + 20x^3t + 15x^2t}{(x^3 + 5t)^2};$$

$$f_t = \frac{-5x^3 - 5x^4}{(x^3 + 5t)^2}$$

15.



$$f(x, y) = x + y^2 - \frac{1}{5}x^3$$

CHAPTER 6 FORM D

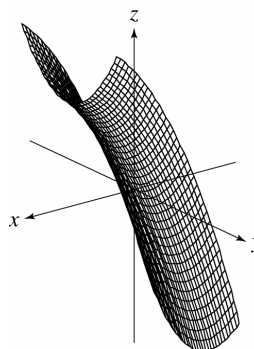
1. $e^2 + 7$
2. $e^x + 6xy^2$
3. $6x^2y + 5$
4. $e^x + 6y^2$
5. $12xy$
6. $12xy$
7. $6x^2$
8. Minimum = $-\frac{1}{11}$ at $\left(-\frac{2}{11}, -\frac{1}{11}\right)$
9. None
10. (a) $y = \frac{5}{2}x + 8$
(b) \$18 million
11. Maximum = $-\frac{121}{10}$ at $\left(-\frac{11}{5}, -\frac{33}{10}\right)$
12. 279

13. \$150,000 for labor; \$50,000 for capital

$$14. f_x = \frac{9x^4 + 18x^2t + 12xt}{(2t - 3x^3)^2};$$

$$f_t = \frac{-6x^3 - 6x^2}{(2t - 3x^3)^2}$$

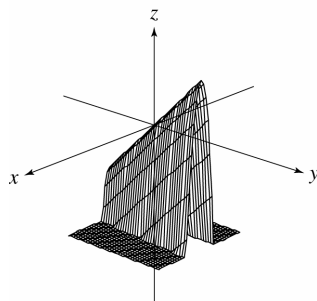
15.



$$f(x, y) = 2x + \frac{1}{4}y^2 - \frac{1}{5}x^2$$

CHAPTER 6, FORM E

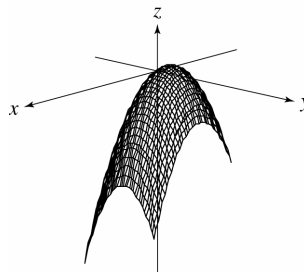
1. $-32 + e^3$
2. $6xy + e^x$
3. $5 + 3x^2$
4. $6y + e^x$
5. $6x$
6. $6x$
7. 0
8. Minimum = $-\frac{1}{8}$ at $\left(\frac{3}{4}, -1\right)$
9. None
10. (a) $y = \frac{5}{2}x + \frac{11}{3}$
(b) \$13.67 million
11. Maximum = 33 at (1, 5)
12. \$2912
13. \$156,250 for labor; \$93,750 for capital
14. $f_x = \frac{-x^6 + 4x^3t + 3x^2t}{(x^4 + t)^2};$
 $f_t = \frac{-x^4 - x^3}{(x^4 + t)^2}$
- 15.



$$f(x, y) = \frac{1}{2}x^3 - 8x^2 + y$$

CHAPTER 6, FORM F

1. $\frac{3}{e} + 14$
2. $3e^x + 4xy$
3. $2x^2 + 5$
4. $3e^x + 4y$
5. $4x$
6. $4x$
7. 0
8. None
9. Minimum = -9 at (3, 0)
10. (a) $y = 2x + \frac{2}{3}$
(b) \$8.67 million
11. Maximum = 4560 at (-4, 32)
12. \$7776
13. \$120,000 for labor; \$30,000 for capital
14. $f_x = \frac{-x^4 - 15x^2t - 10xt}{(x^3 - 5t)^2};$
 $f_t = \frac{5x^3 + 5x^2}{(x^3 - 5t)^2}$
- 15.



$$f(x, y) = y - \frac{2}{3}x^2 - \frac{3}{4}y^2$$