

Math. Homework.

Section 12.1

1. $(-\infty, -2)$, $(-2, -\infty)$ B. $x = -2$

2. $(-\infty, 1)$ decreasing $(1, \infty)$ B. $x = 1$

3. $(-\infty, 3) \cup (5, \infty)$, decrease $(3, 5)$, Max. $x = 3$, Min. $x = 5$

4. Critical Nos. $(-\frac{1}{2}, \frac{43}{4})$, $(2, -83)$
Increase $(-\infty, -\frac{1}{2}) \cup (2, \infty)$, decrease $(-\frac{1}{2}, 2)$

5. No critical Nos. (b) B. No increasing (c) decrease $(-\infty, -3) \cup (-3, \infty)$

6. Critical No. $(-5, 0)$ (b) Increase $(-5, \infty)$ (c) No decreasing

7. A. $-20, -24$ at $x = -4, -2$

8. A. $24, 8$ at $x = -5, -1$

Section 12.2

1. A. $f''(0) = -8$, $f''(8) = 232$ $f''(x) = 30x - 8$

2. $f'(0) = 1728$, $f'(3) = 18252$ $f'(-2) = 432$ • $f''(x) = 108(3x+4)^2$

3. $f''(0) = 0$ $f''(1) = -1$ $f''(-1) = -2/9$ $f'(x) = \frac{14}{81x^{16/9}}$

4. $f''(0) = 3$ $f''(9) = 3e^9$ $f''(-3) = \frac{3}{e^3}$

5. $V(t) = 14t + 9$ $V(0) = 9$ $V(2) = 37$
 $a(t) = 14$ $a(0) = 14$ $a(6) = 14$

6. C. upward $(0, \infty)$, C. downward $(-\infty, 0)$ • Inflection Point $(0, -9)$

7. C. upward $(-4/3, \infty)$ C. downward $(-\infty, -4/3)$, inf. points $(-4/3, \frac{434}{27})$

8. A. $x = -5, 4$ $x = 4$ Min at $x = -5$

9. A. $x = 4$, Max at $x = 4$ No local Min.

10. A. $x = 1$ and Min at $x = 9$

Section 12.2

11. to be done online

12. B. (b) $f'(5) = 0.87$ $f'(9) = 0.51$

option.

13. ~~A (1-12) weeks~~ (b) $f'(4) = 0.94$ $f'(7) = 0.57$

option B

Section 12.3

1. Max. Min at $x = -2$, Max. $x = 5$

3. Max. $x = 0$

5. Min $x = 0$

6. A. $x = -6$

7. 11 days, % 32.37%

8. 2.25 square

Section 12.4

7. $y = \frac{3}{4}x - \frac{25}{4}$

8. $y = \frac{12}{5}x + \frac{8}{5}$

Section 12.5

1. 2

2. 1.0

3. $\frac{81}{y^3}$

4. $\frac{9}{x^3}$

Section 12.6

1. option B, then A.

2. A $(-\frac{1}{3}, \frac{50}{27})$, Min $(\frac{5}{3}, -\frac{974}{27})$
inflection points $(\frac{7}{3}, -\frac{974}{27})$

3. Max. $(-5, -2)$ Min $(5, 2)$, No. inflection point
8. $\frac{3}{4}x^4 + 4x + 41$

Section 13.2

3. $2e^{1x} + C$

Section 13.3

1 (a) 3

(c) 3.33

(b) 3.25

Section 13.5

1. $\frac{176}{3}$

2. $\frac{25}{162}$

section 13.7

1. $y = -3e^{-4x} + C$

2. $y = e^{13/2 x^2} + K$

3. $y = e^{7t + C_1}$

4. $y = x^6 - x^4 - 3$