

Math 1710 Section 3
Midterm 2 - Review
Answers

I.

1. The tip of the shadow is receding at a rate of 8 ft/sec. The length of the shadow is decreasing at a rate of 3 ft/sec.
2. $\frac{dr}{dt} = 1$ ft/min, $\frac{dA}{dt} = 40\pi$ ft²/min

II. Find the heights of the absolute maxima and minima of the following functions over the given intervals.

3. absolute minimum = $-\sqrt{3}$, absolute maximum = 1
4. absolute minimum = -1, absolute maximum = 2
5. absolute minimum = -11, absolute maximum = 1

III.

6. The ball will reach a maximum height of 46.625 feet after 1.25 seconds.
7. $2\sqrt{2}$ amperes

V.

12. $w = h = 3\sqrt{2}$ in., $l = 108 - 12\sqrt{2}$
13. $r = \sqrt[3]{\frac{500}{\pi}}$, $h = \frac{1000}{\pi \sqrt[3]{\frac{250000}{\pi^2}}}$

VI. Use L'Hopital's Rule to find the following limits.

14. 3
15. 100
16. ∞
17. 0
18. $\frac{7}{11}$

VII.

19. $x_3 = 3.1415926$
20. $x_2 = 0.734785$

VIII. Find functions that satisfy the given information.

21. $f(x) = \frac{1}{\pi} \sin \pi x + 1$
22. $g(x) = x^2 - x^3 + 4x + 1$
23. $h(x) = 2x$
24. $f(x) = \frac{1}{x} + 2x - 2$
25. $g(x) = -\sin x + \cos x + x^3 - 1$