

Answers to review problems-Final Exam

MATH 1210 - Fall 2004

1. $D_{g \circ f} = [0, 9]$.
2. 2.
3. -1.
4. $\frac{n^2 - m^2}{2}$.
5. 0.
6. 4.
7. $\frac{1}{8}$.
8. ∞ .
9. D.
10. $a = -10$.
11. $-\frac{1}{16}$.
12. $a = 1$ and $b = 1$.
13. $a = \frac{2}{3}$.
14. $f'(1) = -\frac{1}{2}$.
15. $f'(x) = 2x \tan(x^2 + 1) + (2x^3 - 2x) \sec^2(x^2 + 1)$.
16. $3x^{\frac{7}{2}}$.
17. $f''(x) = 2 \cos(x^2 + 1) - 4x^2 \sin(x^2 + 1)$.
18. $\frac{5}{3}$.
19. $36\pi \text{ cm}^3/\text{s}$.
20. $-10\text{m}^2/\text{s}$.
21. 10.05.
22. Local maximum at $x = 2$ and local minimum at $x = 5$.
23. $(0, \infty)$.
24. I. True, II. False.
25. I. True, II. False, III. False.
26. There are two inflection points.
27. Minimum value: -13 and maximum value: 14.
28. a^2 .
29. See for example the graph of $y = (2 - y)^3$.
30. $\frac{9}{16} \sqrt[3]{(2t^2 - 11)^4} + C$.
31. $f(\pi) = \pi^2 + 1$.
32. $y = \sqrt[3]{(x^{\frac{3}{2}} + 7)^2}$.
33. -7.
34. $\frac{3}{2}$.
35. 6.
36. $\sqrt{2}$.
37. $\int_0^3 (1 + x)^2 dx$.

38. $\frac{37}{3}$.

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

40. $\sqrt[3]{\frac{a^3 + b^3}{2}}$.

41. $\int_{-2}^1 -x^2 - x + 2 \, dx$.

42. 92 feet.

43. $\frac{\pi}{6}$.

44. $2\pi \int_1^3 \frac{4}{x} - 1 \, dx$.

45. $\int_0^{\frac{1}{2}} \sqrt{1 + 4x^2} \, dx$.

46. 5 ft-lbs.

47. 7987.2 ft-lbs.

48. $\left(\frac{2}{3}, \frac{2}{3}\right)$.