

MATH 112 SOLUTIONS FOR 3.1, P. 225

2. $\Delta V = 10.981$ and $dV = 10.8$.
3. $\Delta A = 1.21\pi$ sq. ft. and $dA = 1.2\pi$ sq. ft.
6. V increases by about 6%.
9. (a) We see only $\frac{1}{12}$ of the cycle of a sinusoid, so it looks pretty straight.
(b) Since the graph crosses 12, the month contains an equinox. The graph is increasing, so the days are getting longer. Since Buenos Aires is in the southern hemisphere, the month is September.
10. (c) $\Delta y = 0.010101\dots$ and $dy = 0.01$, so the estimate to $\frac{1}{.99}$ is 1.01 and the exact value is $1.\overline{01}$.
(f) The estimate to $\sqrt[3]{63}$ is $3.9791\overline{6}$ and the actual value is about 3.979057.
11. (a) $3x^2 dx$ (c) $(8 + 8x^{-9}) dx$ (e) $5 \sec 5x dx$ (g) $\frac{3}{x} e^{3 \ln x} dx = 3x^2 dx$.
- F. (a) $\ln(1.005) \approx \ln(1) + .005(1/1) = .005$.
(b) $e^{0.1} \approx e^0 + (0.1)(e^0) = 1.1$.
(c) $\sin(5^\circ) = \sin(\pi/36) \approx \sin(0) + (\pi/36)(\cos(0)) = \pi/36$.