Math Xb
Useful Formulas for Related Rates
Spring 2004

- The Pythagorean Theorem: $a^2 + b^2 = c^2$.

- The area and circumference of a circle:

$$\begin{aligned} A &= \pi r^2, \\ C &= 2\pi r. \end{aligned}$$

- The surface area and volume of a sphere:

$$\begin{aligned} A &= 4\pi r^2, \\ V &= \frac{4}{3}\pi r^3. \end{aligned}$$

- The surface area and volume of a cylinder:

$$\begin{aligned} A &= 2\pi r^2 + 2\pi r h, \\ V &= \pi r^2 h. \end{aligned}$$

- The surface area and volume of a cone:

$$\begin{aligned} A &= 4\pi r \sqrt{r^2 + h^2}, \\ V &= \frac{1}{3}\pi r^2 h. \end{aligned}$$

- Don't forget about similar triangles!