

## Notes for Section 3

When solving problems that involve a percentage rate  $r$ , we can simplify our calculations by multiplying the basis by either  $(1 + r)$ , if the quantity is increasing (this is called appreciation), or  $(1 - r)$ , if the quantity is decreasing (this is called depreciation).

Ex: A \$45 purchase with a sales tax rate of 8.25% would result in a total cost of

$$\$45 \cdot 1.0825 = \$48.7125, \text{ or } \$48.71$$

Ex: A \$20,000 new car depreciates by 25% the day after you buy it. How much is it worth?

$$\$20,000 \cdot (1 - 0.25) = \$20,000 \cdot 0.75 = \$15,000$$

Ex: The population of the Houston MSA (metropolitan statistical area) was about 5.95 million in 2010 (5,950,000), with a 10-year growth rate of 26.1%; so we expect the Houston metro area to have  $(5.95 \cdot 1.261) \approx 7.50$  million people in the 2020 census.