

DISTANCE AND MIDPOINT FORMULAS

Distance between $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Midpoint of P_1P_2 : $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

LINES

Slope of line through $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Point-slope equation of line through $P_1(x_1, y_1)$ with slope m

$$y - y_1 = m(x - x_1)$$

Slope-intercept equation of line with slope m and y -intercept b

$$y = mx + b$$

Two-intercept equation of line with x -intercept a and y -intercept b

$$\frac{x}{a} + \frac{y}{b} = 1$$

LOGARITHMS

$y = \log_a x$ means $a^y = x$

$$\log_a a^x = x$$

$$a^{\log_a x} = x$$

$$\log_a 1 = 0$$

$$\log_a a = 1$$

$$\log x = \log_{10} x$$

$$\ln x = \log_e x$$

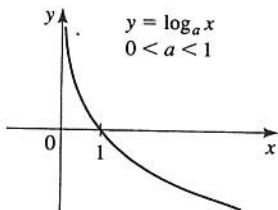
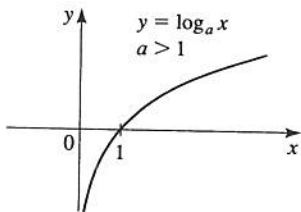
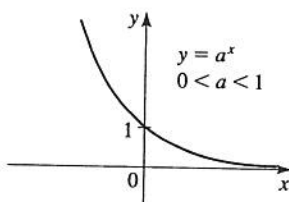
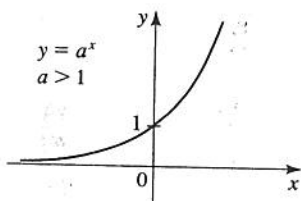
$$\log_a xy = \log_a x + \log_a y$$

$$\log_a \left(\frac{x}{y}\right) = \log_a x - \log_a y$$

$$\log_a x^b = b \log_a x$$

$$\log_b x = \frac{\log_a x}{\log_a b}$$

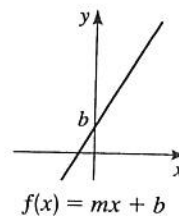
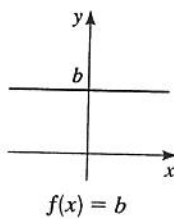
EXPONENTIAL AND LOGARITHMIC FUNCTIONS



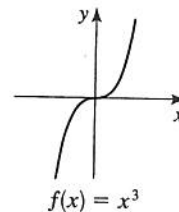
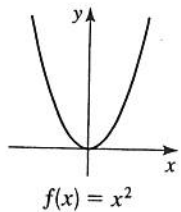
GRAPHS OF FUNCTIONS

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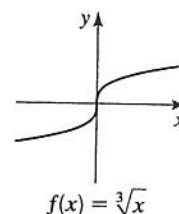
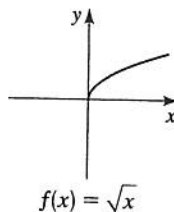
Linear functions: $f(x) = mx + b$



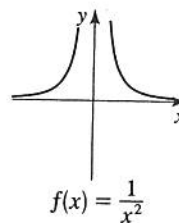
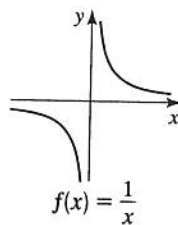
Power functions: $f(x) = x^n$



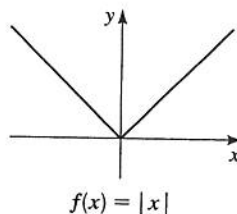
Root functions: $f(x) = \sqrt[n]{x}$



Reciprocal functions: $f(x) = 1/x^n$



Absolute value function



Greatest integer function

