Transformation of Trigonometric Functions

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Transformation of Trigonometric functions

The general transformation of a trignometric function is given below
for sine and cosine.

$$f(x) = a \sin[k(x - d)] + c, \quad \text{or}$$
$$f(x) = a \cos[k(x - d)] + c$$

where,

$$|a| = \text{amplitude}$$
$$d = \text{phase shift}$$
$$c = \text{vertical translation}$$
$$\frac{2\pi}{k} = \text{period}$$

Exercises

1. Sketch the following.

   a) $-2\sin\theta + 1$ d) $\sin(\theta/2) + 1$

   b) $\cos(\theta - \pi)$ e) $2\cos(3\theta)$

   c) $\sin\theta + 3$ f) $-\cos\theta - 1$

2. State the amplitude, phase shift, vertical translation and period of the functions in #1.