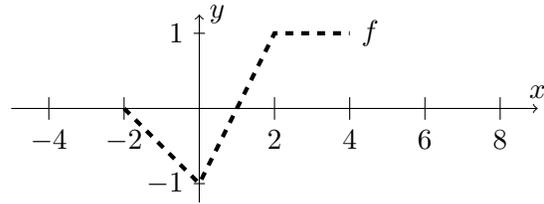
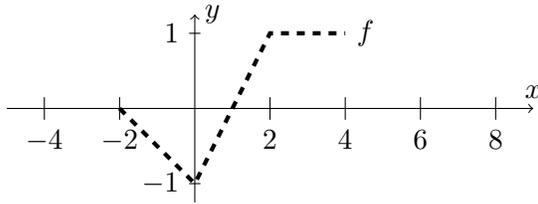


We suggest you review all major topics we have studied since Test 2 (Chapter 6, Trig T.1–T.4, sections 7.1–7.7). The actual Test 3 will have fewer questions than shown here. Do not expect questions on Test 3 to be copies of these practice problems.

1. The graph of  $y = f(x)$  is shown 4 times. Sketch graphs of  $g, h, G$  and  $H$  in parts (a)–(d).

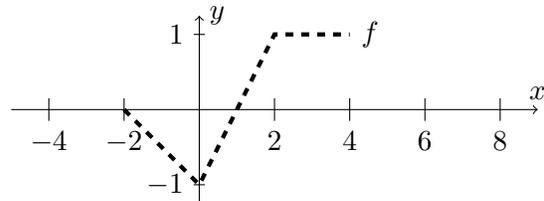
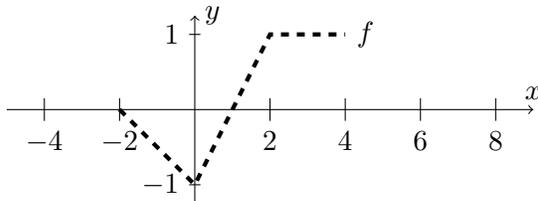
a)  $g(x) = f(2x)$

b)  $h(x) = f\left(\frac{x}{2}\right)$



c)  $G(x) = 2f(x) + 1$

d)  $H(x) = f(2x - 6)$



e) Compute  $g(0.5) =$

$g(2) =$

$h(-2) =$

$h(6) =$

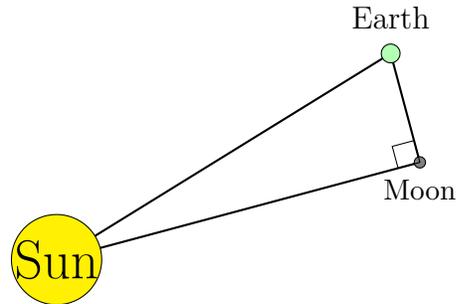
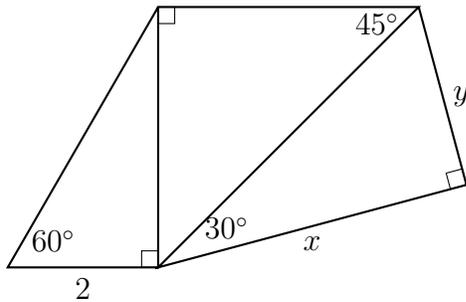
Compute  $G(-2) =$

$G(2) =$

$H(2) =$

$H(5) =$

2. Find the exact values of lengths  $x$  and  $y$  in the lefthand figure below.



3. When the moon is exactly **half-full**

- Earth, Moon and Sun form a right angle (see righthand figure above [but it's not to-scale]),
- the angle formed by Sun, Earth and Moon is measured to be  $89.85^\circ$ .

If the Earth–Moon distance is 240,000 miles, estimate the distance between Earth and Sun.

4. A Ferris wheel completes a turn every 9 minutes, has radius 30 feet, and its boarding platform is 4 feet above the ground.

- Find the height above ground for a person at the 2 o'clock position.
- Sketch a graph for the height  $f(t)$ , in feet, if at  $t = 0$  the person is at the 3 o'clock position, going up.
- If  $g(t) = 3f(t)$ , find amplitude and period of function  $g$ ; interpret in terms of the height and rotation speed of a different ride.
- If  $h(t) = f(3t)$ , find amplitude and period of function  $h$ ; interpret in terms of height and rotation speed of another ride.

