

6.5 Tangent and Cotangent Functions Honors Algebra 2 with Trig

Tangent:

$$y = A \tan(Bx - C) + D$$

Period: π

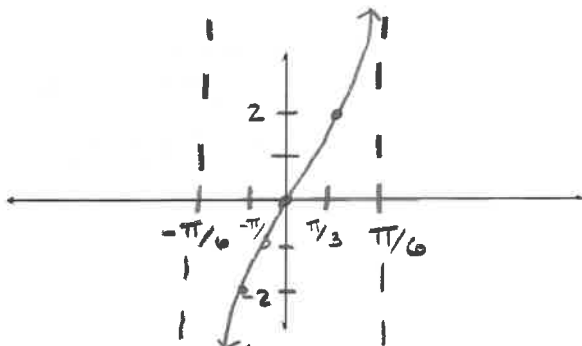
$$-\frac{\pi}{2} < Bx - C < \frac{\pi}{2}$$

Graph the following:

1. $y = 2 \tan 3x$

$$-\frac{\pi}{2} < 3x < \frac{\pi}{2}$$

$$-\frac{\pi}{6} < x < \frac{\pi}{6}$$

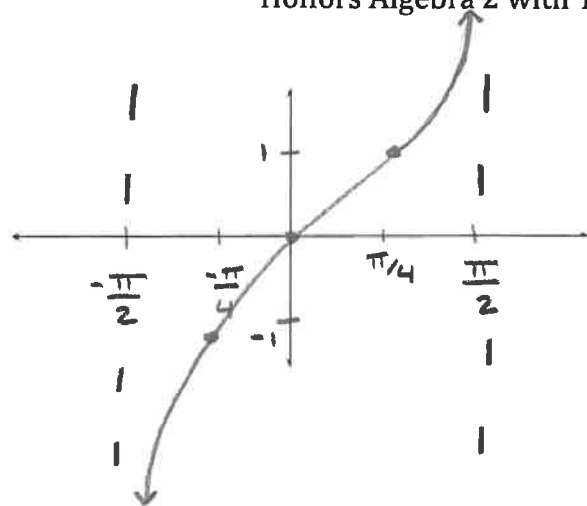
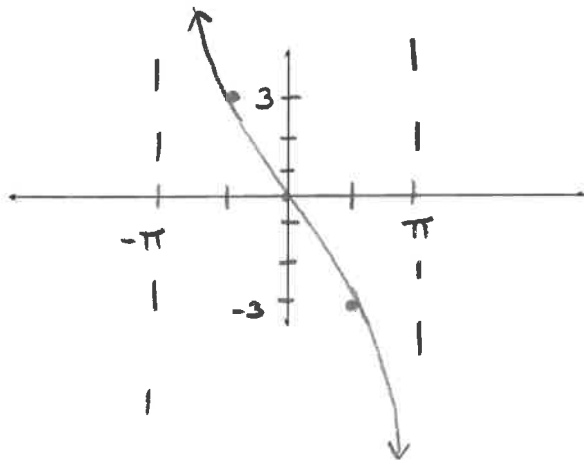


2. $y = -3 \tan \frac{1}{2}x$

*neg reflects

$$-\frac{\pi}{2} < \frac{1}{2}x < \frac{\pi}{2}$$

$$-\pi < x < \pi$$

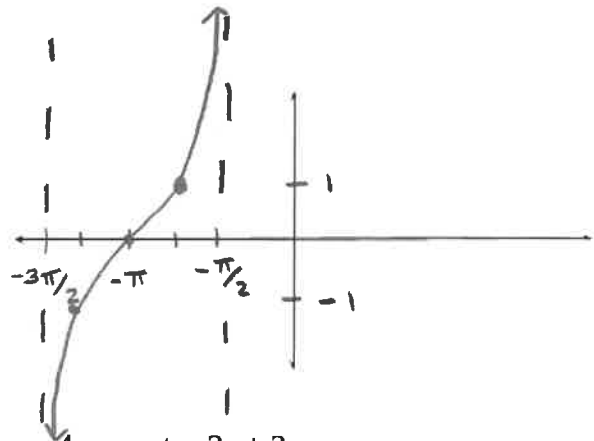


3. $y = \tan(x + \pi)$

$$-\frac{\pi}{2} < x + \pi < \frac{\pi}{2}$$

$$-\frac{3\pi}{2} < x < -\frac{\pi}{2}$$

OR shift everything left π

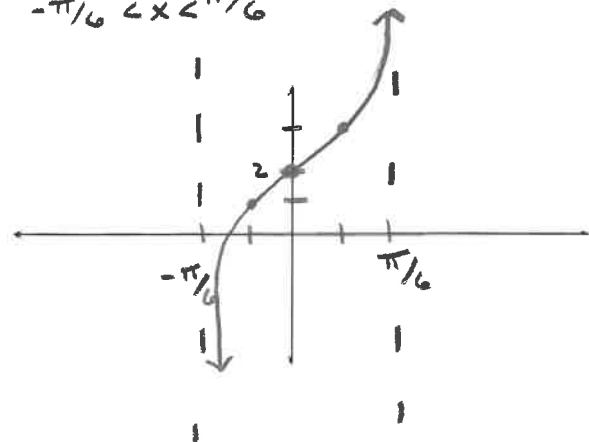


4. $y = \tan 3x + 2$

up 2

$$-\frac{\pi}{2} < 3x < \frac{\pi}{2}$$

$$-\frac{\pi}{6} < x < \frac{\pi}{6}$$



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Cotangent:

$$y = A \cot(Bx - C) + D$$

Period: π

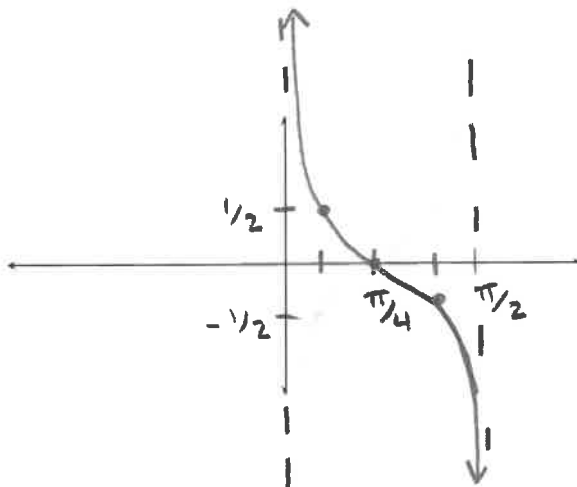
$$0 < Bx - C < \pi$$

Graph the following:

5. $y = \frac{1}{2} \cot 2x$

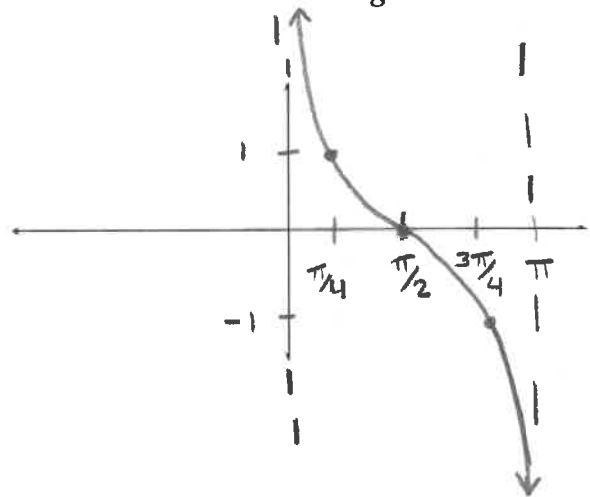
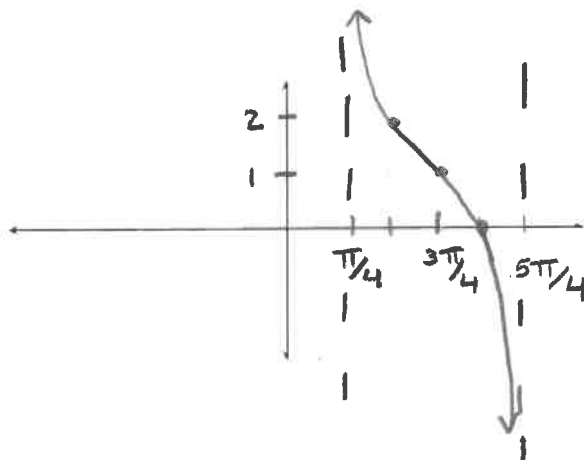
$$0 < 2x < \pi$$

$$0 < x < \frac{\pi}{2}$$



6. $y = 1 + \cot(x - \frac{\pi}{4})$

$$\frac{\pi}{4} < x < \frac{5\pi}{4}$$



7. $y = \cot(2x - \frac{3\pi}{2})$

$$0 < 2x - \frac{3\pi}{2} < \pi$$

$$\frac{3\pi}{2} < 2x < \frac{5\pi}{2}$$

$$\frac{3\pi}{4} < x < \frac{5\pi}{4}$$

