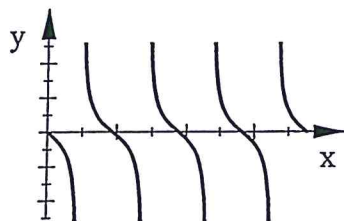Algebra 2   Bellwork   Friday, June 10, 2016

1. Write the equation of the Tangent function shown. The window is 0 to 6π

2. Use this rational function: $y = \dfrac{-3(x+6)(x-2)}{(x+3)(x-3)} = \dfrac{-3x^2 - 12x + 36}{x^2 - 9}$

a) Find the x and y-intercepts

b) Write the equation of the Horizontal Asymtptote, if any.

c) Find points of discontinuity, if any, and classify them as Holes or Vertical Asymptotes.

Simplify each. Use absolute value symbols when necessary.

3. $\sqrt[4]{162a^9 b^{20} c^{42}}$

4. $\sqrt[5]{64x^{28} y^{32} z^{17}}$

5. Solve this rational equation:

$\dfrac{x}{x+4} + \dfrac{7}{x-1} = \dfrac{x+34}{x^2 + 3x - 4}$

6. Solve this radical equation:

$\sqrt{24 - 4x} + 3 = x$

7. Rationalize this denominator and simplify. $\dfrac{12a}{\sqrt[4]{9a^3 b^5 c}}$

8. The probability that I order a steak for dinner is $\dfrac{3}{10}$ and the probability that I order a Caesar salad is $\dfrac{4}{9}$. Find the following probability as a percent rounded to the nearest tenth.

P(Steak or Caesar salad)=

9. Write both a Sin and a Cos equation for the graph shown.

$\left(\dfrac{17\pi}{24}, 4\right)$

$\left(-\dfrac{\pi}{8}, -1\right)$

$\left(\dfrac{21\pi}{24}, -1\right)$

$\left(\dfrac{9\pi}{24}, -6\right)$

1
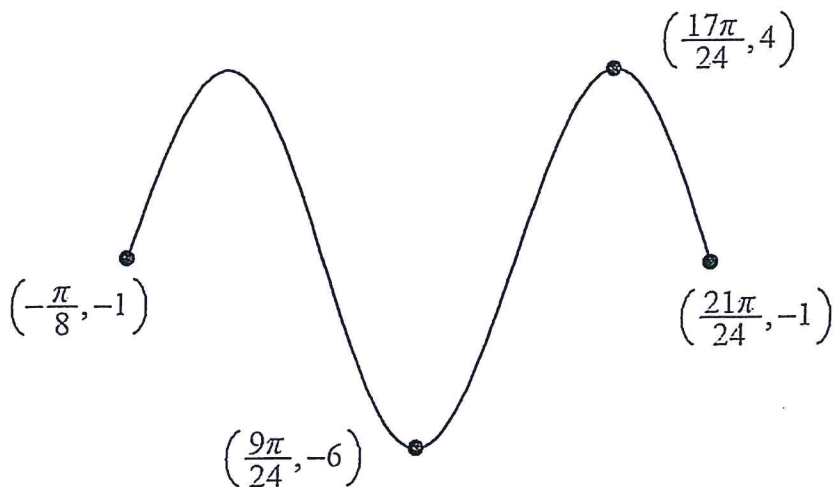
1. Write the equation of the Tangent function shown. The window is 0 to 6π
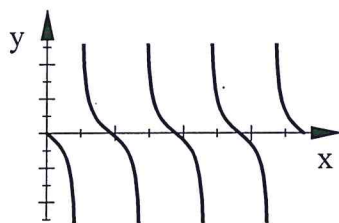
Period $= \dfrac{6\pi}{4} = \dfrac{3\pi}{2}$

$b = \dfrac{\pi}{\frac{3\pi}{2}} = \pi \cdot \dfrac{2}{3\pi}$

$b = \dfrac{2}{3}$

$$y = -\operatorname{Tan}\dfrac{2x}{3}$$

2. Use this rational function: $y = \dfrac{-3(x+6)(x-2)}{(x+3)(x-3)} = \dfrac{-3x^2 - 12x + 36}{x^2 - 9}$

a) Find the x and y-intercepts

$\text{Y-INT} = \dfrac{36}{-9} = -4$

$\text{X-INT} = -6, 2$

b) Write the equation of the Horizontal Asymptote, if any.

$y = \dfrac{-3}{1} = -3$

c) Find points of discontinuity, if any, and classify them as Holes or Vertical Asymptotes.

Holes: NONE   VA: $X = \pm 3$

Simplify each. Use absolute value symbols when necessary.

3. $\sqrt[4]{162a^9 b^{20} c^{42}}$

$81 \cdot 2$

$= 3a^2 |b^5| c^{10} \sqrt[4]{2ac^2}$

4. $\sqrt[5]{64x^{28}y^{32}z^{17}}$

$32 \cdot 2$

$= 2x^5 y^6 z^3 \sqrt[5]{2x^3 y^2 z^2}$

5. Solve this rational equation:

$\dfrac{x}{x+4} + \dfrac{7}{x-1} = \dfrac{x+34}{x^2 + 3x - 4}$

6. Solve this radical equation:

$\sqrt{24 - 4x} + 3 = x$

SEE NEXT SHEET FOR REMAINING ANSWERS

7. Rationalize this denominator and simplify. $\dfrac{12a}{\sqrt[4]{9a^3 b^5 c}}$

8. The probability that I order a steak for dinner is $\dfrac{3}{10}$ and the probability that I order a Caesar salad is $\dfrac{4}{9}$. Find the following probability as a percent rounded to the nearest tenth.

P(Steak or Caesar salad)=

9. Write both a Sin and a Cos equation for the graph shown.

$\left(\dfrac{17\pi}{24}, 4\right)$

$\left(-\dfrac{\pi}{8}, -1\right)$

$\left(\dfrac{21\pi}{24}, -1\right)$

$\left(\dfrac{9\pi}{24}, -6\right)$

½ cycle
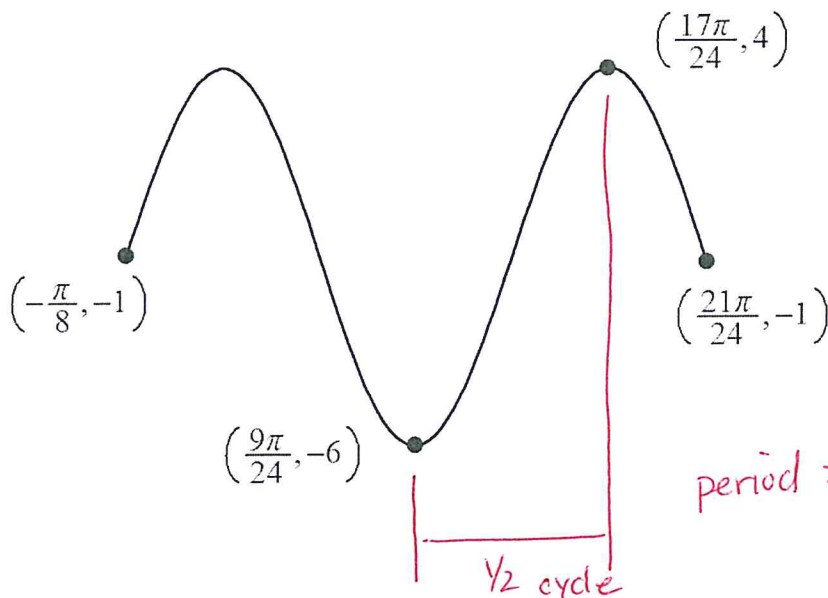
$\text{period} = \left(\dfrac{17\pi}{24} - \dfrac{9\pi}{24}\right) \times 2$

$= \dfrac{8\pi}{24} \cdot 2 = \dfrac{2\pi}{3}$

1

#5

$$\frac{x-1}{x-1} \cdot \frac{x}{x+4} + \frac{7}{x-1} \cdot \frac{x+4}{x+4} = \frac{x+34}{(x+4)(x-1)}$$

$$\frac{x^2-x}{(x+4)(x-1)} + \frac{7x+28}{(x+4)(x-1)} = \frac{x+34}{(x+4)(x-1)}$$

$$x^2-x+7x+28 = x+34$$

$$x^2+5x-6=0$$

$$(x+6)(x-1)=0$$

$$x=-6, \cancel{1}$$

$$\boxed{x=-6}$$

⑦
$$\frac{12a}{\sqrt[4]{3^2 a^3 b^5 c}} \cdot \frac{\sqrt[4]{3^2 a b^3 c^3}}{\sqrt[4]{3^2 a b^3 c^3}} = \frac{12a\sqrt[4]{3^2 a b^3 c^3}}{\sqrt[4]{3^4 a^4 b^8 c^4}} = \frac{12a\sqrt[4]{3^2 a b^3 c^3}}{3a b^2 c} = \boxed{\frac{4\sqrt[4]{9 a b^3 c^3}}{b^2 c}}$$

⑧ $p(\text{steak or Caesar salad}) = \frac{3}{10} + \frac{4}{9} - \left(\frac{3}{10} \cdot \frac{4}{9}\right) = \boxed{61.1\%}$

⑨ Period $= \frac{2\pi}{3}$ (see previous sheet) $b = \frac{2\pi}{\frac{2\pi}{3}} = 3$

Amplitude $= 5$

midline: $y=-1$

Sine Eq

IF START AT $\left(-\frac{\pi}{8}, -1\right)$
  phase shift $= \pi/8$ left

$$y = 5\sin\left(3\left(x+\frac{\pi}{8}\right)\right)-1$$

#6

$$\sqrt{24-4x} + 3 = x$$
$$\phantom{\sqrt{24-4x}} -3 \quad -3$$

$$\left(\sqrt{24-4x}\right)^2 = (x-3)^2$$

$$24-4x = x^2-6x+9$$

$$0 = x^2-2x-15$$

$$0=(x-5)(x+3)$$

$$x=5, \cancel{-3}$$

$$\boxed{x=5}$$

Cos eq:

IF START AT $\left(\frac{9\pi}{24}, -6\right)$
  phase shift $= \frac{9\pi}{24}$ left
  & upside down

$$y = -5\cos\left(3\left(x-\frac{9\pi}{24}\right)\right)-1$$