8. Find the values of the missing trig functions given $\sin\theta = -\dfrac{8}{17}$ and $\cos\theta = \dfrac{15}{17}$.

For questions 9- 15, find the exact value of each expression.

9. $\tan\dfrac{9\pi}{2}$

10. $\sec\dfrac{-11\pi}{4}$

11. $\sin\dfrac{-35\pi}{6}$

12. $\cot\dfrac{19\pi}{6}$

$\alpha = 30$

$\dfrac{1}{2}\cdot\dfrac{2}{\sqrt{3}} = \dfrac{\sqrt{3}}{3}$
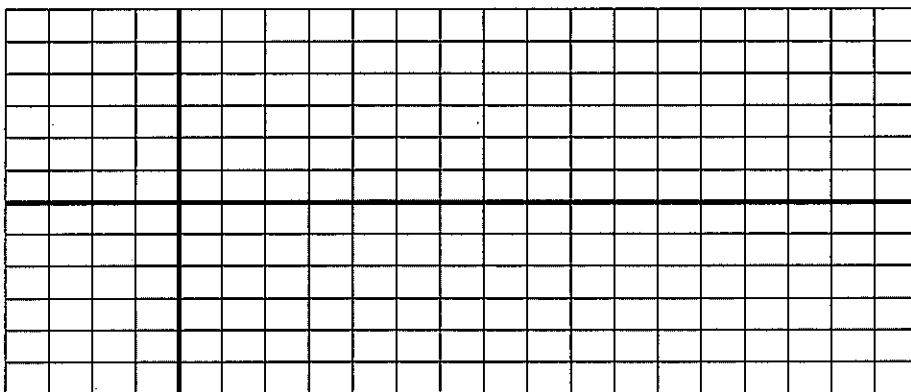
$\cot\left(\dfrac{\pi}{6}\right) = \boxed{\dfrac{\sqrt{3}}{3}}$

13. $\sec 510°$

14. $\sin\dfrac{3\pi}{2}\tan\left(-\dfrac{8\pi}{3}\right) + \cos\left(-\dfrac{5\pi}{6}\right)$

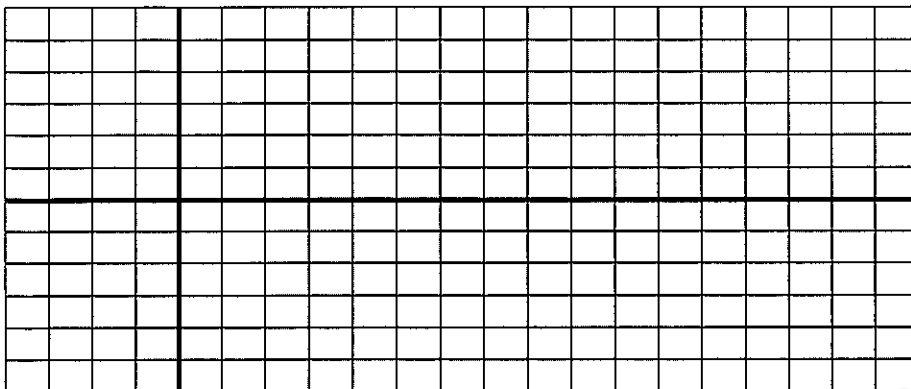15. $\dfrac{\tan 150°\csc 240°}{\cos 135° - \sin 300°}$

For questions 16-19, graph one period of each function. Fully label your axes!! Use color for your final function!

16. $f(x) = 2 - 3\sec 4(x - \pi)$

17. $f(x) = -1 + 4\sin\dfrac{1}{2}(\theta + 45°)$

22. $\tan\left(x+\dfrac{\pi}{4}\right)+1=\sqrt{2}\cos x\sec\left(x+\dfrac{\pi}{4}\right)$

23. $(1+\tan x)\tan 2x=\dfrac{2\tan x}{1-\tan x}$

For questions 24-27, solve each equation in the indicated domain.

24. $2\cot^2 x+2\cot x=0$, Domain: $(-\infty,\infty)$

$\pi-\dfrac{\pi}{4}=\dfrac{3\pi}{4}$

$2\cot x(\cot x+1)=0$

$2\cot x=0 \qquad \cot x=-1$

$2\pi-\dfrac{\pi}{4}$

$\dfrac{\cos}{\sin}=0 \qquad \dfrac{\pi}{2}+2\pi n \qquad \dfrac{3\pi}{4}+2\pi n$

$\dfrac{3\pi}{2}+2\pi n \qquad \dfrac{7\pi}{4}+2\pi n$

25. $4\csc^2\theta+4\csc\theta+1=0$, Domain: $[0°,360°)$

26. $1-\cos\theta=-\sin\theta$, Domain: $[-180°,180°)$

27. $\dfrac{\tan 10\theta+\tan 50°}{1-\tan 10\theta\tan 50°}=\dfrac{\sqrt{3}}{3}$, Domain: $(0°,90°)$

a. $x=-3$
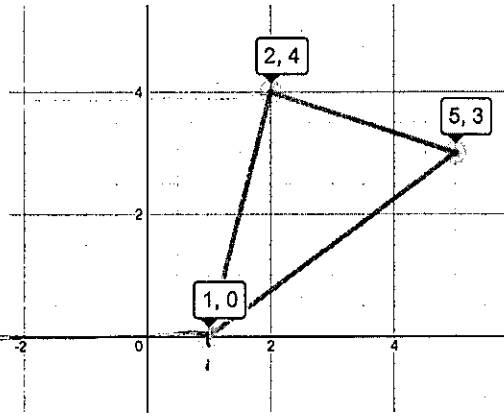
$V_F = \frac{\pi}{3}(5^2+40+8^2)=43\pi$

b. $y=-2$

$V_F = \frac{\pi}{3}(3)(4^2+32+8^2)=112\pi$

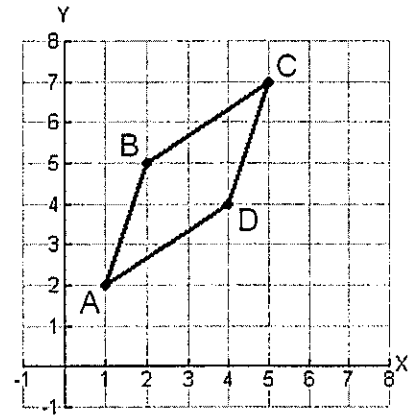$V_F = \frac{\pi}{3}(4)(4^2+20+5^2)=\frac{244\pi}{3}$

$155\pi - \frac{244\pi}{3}$

$\frac{465}{3} - \frac{244\pi}{3} = \boxed{\frac{221\pi}{3}}$
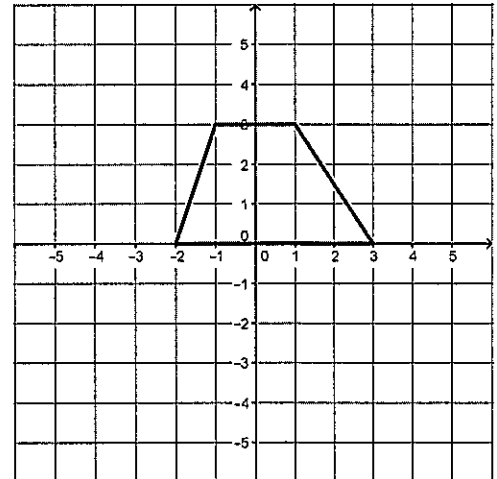
48. Find the volume of the solid formed when the triangle is rotated about

 a. $x=-1$.

 b. $y=5$.

49. Find the volume of the solid formed when the trapezoid is rotated about

 a. $y=4$

 b. $x=-3$

50. Find the volume of a hollow sphere, where the outter diameter is 15cm and the length of the inner diameter is 7cm.

51. Find the volume of the frustum with $r_1 = x + 3$, $r_2 = 2x - 1$, and $h = 4x$.

52. Is $3 - i$ a zero to the function $g(x) = x^3 - 10x^2 + 34x - 40$?

$(3-i)^2 = 9 - 6i - 1 = \underline{8 - 6i}$

$(8-6i)(3-i) = 24 - 18i - 8i - 6$

$= \underline{18 - 26i}$

$(18-26i) - 10(8-6i) + 34(3-i) - 40$

$18 - 26i - 80 + 60i + 102 - 34i - 40$

$= 0$ |Yes!|

53. At 1:00pm (13:00) high tide was at 4 feet, at 8:00 pm (20:00) low tide was -1 feet. Find the period of the trigonometric function that would model the tides.

54. Simplify

$$\frac{3 + \dfrac{x}{2 - x}}{\dfrac{1}{x} - 4}$$

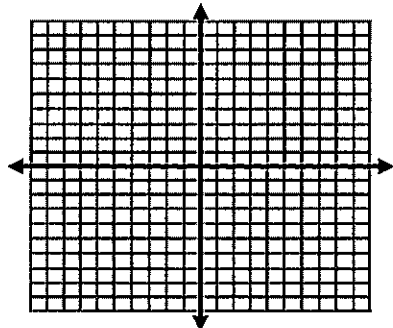55. Factor the following polynomial: $125x^3 - 8y^6$

56. Expand the binomial: $(5y - x^3)^5$

57. Divide using long division or unboxing method:

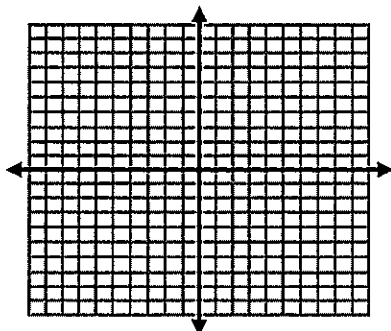$$\frac{2x^3 - 4x + 512x^3 - 11x^2 + 22x - 15}{x^2 - 4x + 5}$$

Graph the function and label the following information. Horizontal Asymptotes can include slant asymptotes.
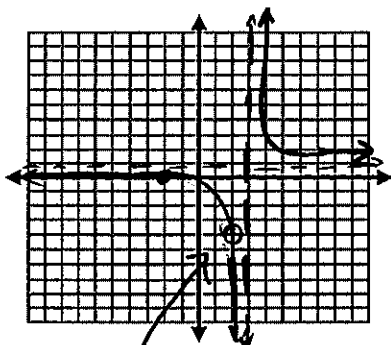
44. $y = \dfrac{x^2 + 4x - 5}{x + 1}$

Zeros:	
Vertical Asymptotes:	
Horizontal Asymptotes:	
Holes:	
Y-Intercept(s):	
Domain:	
range	

45. $y = \dfrac{x^2 + 5x + 6}{x^2 - 9}$

Zeros:	
Vertical Asymptotes:	
Horizontal Asymptotes:	
Holes:	
Y-Intercept(s):	
Domain:	
range	

$(x+2)(x-2)$

46. $y = \dfrac{x^2 - 4}{3x^2 - 15x + 18}$

$3(x^2 - 5x + 6)$
$(x-3)(x-2)$

Zeros:	$x = -2$
Vertical Asymptotes:	$x = 3$
Horizontal Asymptotes:	$y = \frac{1}{3}$
Holes:	$x = 2$
Y-Intercept(s):	$y = -\frac{2}{9}$
Domain:	$(-\infty, 2) \cup (2,3) \cup (3, \infty)$
range	

HOLE!

47. Find the volume of the solid formed when the rectangle shown is rotated about