

SHOW ALL WORK ON THIS TEST OR ON SEPARATE PAPER.

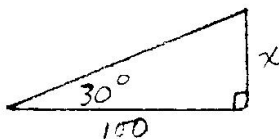
Explain your calculations and procedures for partial credit.

TURN IN ALL WORKSHEETS. CALCULATORS ARE REQUIRED ON THIS TEST.

- Find the six trigonometric functions of the angle θ (in standard position) whose terminal side passes through the point $(-5, 12)$. Give exact form.
- Given that $\cos \theta = 3/8$ and $\sin \theta < 0$, sketch a right triangle and find the remaining five trigonometric functions in exact form.
- Use the calculator to find two values of θ , $0 \leq \theta \leq 2\pi$, such that $\tan \theta = -0.258$. (Sketch!)

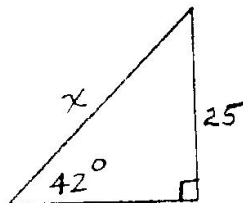
In 4 - 6, solve for X:

4.



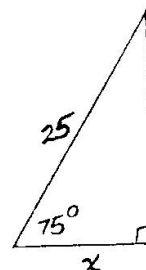
(Exact value!)

5.



(Round answers to nearest thousandth.)

6.



In 7 - 9, sketch the graph of the function (include two full periods).
Label the graphs and describe the viewing rectangle.

7. $f(x) = 2 \cos (2x + \pi)$ 8. $g(x) = 3 \csc (x/2)$ 9. $h(x) = 50 \sin 50x$

In 10 - 12, give information regarding amplitude, period, phase shift.

10. $f(x) = 2 \cos (2x + \pi)$ 11. $g(x) = 2 \tan (2x - \pi)$ 12. $h(x) = \sec 50x$

a) Amplitude?

a) Period?

a) Period?

b) Period?

b) Phase Shift?

b) Phase Shift?

c) Phase Shift?

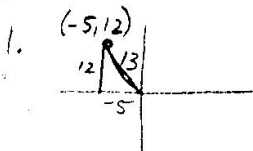
Find the exact value of each of the following by drawing an appropriate figure.

13. $\tan (\arcsin -2/3)$

14. $\sin (\arccos -2/3)$

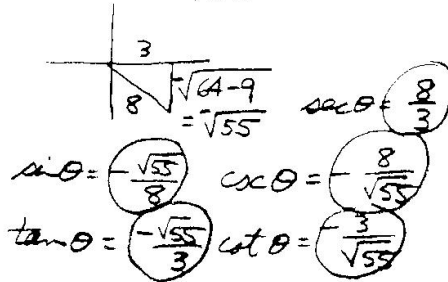
15. $\sin (\arctan x/2)$

16. $\tan (\arccos x/2)$



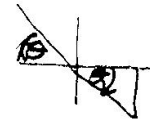
$\sin \theta = \frac{12}{13}$ $\csc \theta = \frac{13}{12}$
 $\cos \theta = \frac{-5}{13}$ $\sec \theta = \frac{-13}{5}$
 $\tan \theta = \frac{-12}{5}$ $\cot \theta = \frac{-5}{12}$

$\cos \theta = \frac{3}{8}$ $\sin \theta < 0$
 QIV.



$\sin \theta = \frac{-8}{\sqrt{73}}$ $\csc \theta = \frac{\sqrt{73}}{-8}$
 $\tan \theta = \frac{-8}{3}$ $\cot \theta = \frac{3}{-8}$

$\tan \theta = -0.258$
 $\theta = -.2525^R$ QIV.
 -14.46°

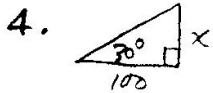


QIV = $-.2525 + 2\pi$

$\approx 6.0307^R$

QII = $\pi - .2525$

$\approx 2.8891^R$ 165.533°

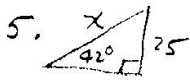


$\tan 30^\circ = \frac{x}{100}$

$x = 100 \tan 30^\circ$

$= 100 \frac{\sqrt{3}}{3} = \frac{100\sqrt{3}}{3}$

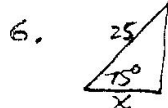
≈ 57.735



$\sin 42^\circ = \frac{25}{x}$

$x = \frac{25}{\sin 42^\circ}$

≈ 37.362



$\cos 75^\circ = \frac{x}{25}$

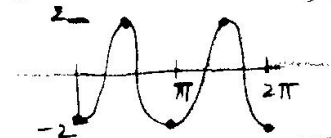
$x = 25 \cos 75^\circ$

≈ 6.470

7. $f(x) = 2 \cos(2x + \pi)$

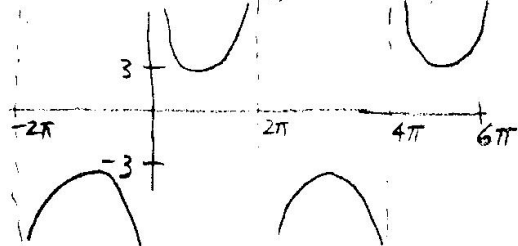
Zoom TRIG

345533



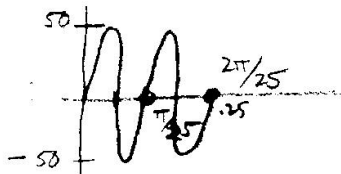
Intercepts: $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

8. $g(x) = 3 \csc(\frac{x}{2})$



Zoom TRIG Asymp: $0, 2\pi, 4\pi, 6\pi$

9. $h(x) = 50 \sin 50x$



Period = $\frac{2\pi}{50} = \frac{\pi}{25}$

Intercepts: $0, \frac{\pi}{50}, \frac{2\pi}{50}, \frac{3\pi}{50}$

10. $f(x) = 2 \cos(2x + \pi)$

a) Amp = 2

b) Period = $\frac{2\pi}{2} = \pi$

c) P.S. $2x + \pi = 0$

$x = -\frac{\pi}{2}$

$\frac{\pi}{2}$ Left

11. $g(x) = 2 \tan(2x - \pi)$

a) Period = $\frac{\pi}{2}$

b) P.S. = $2x - \pi = 0$

$x = \frac{\pi}{2}$ Right

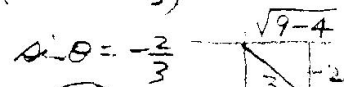
12. $h(x) = \sec 50x$

a) Period = $\frac{2\pi}{50} = \frac{\pi}{25}$

b) P.S. = 0

No Phase Shift

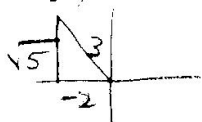
13. $\tan(\arcsin -\frac{2}{3})$ QIV



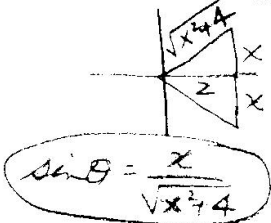
$\tan \theta = \frac{-2}{\sqrt{5}}$

14. $\sin(\arccos -\frac{2}{3})$ QII.

$\sin \theta = \frac{\sqrt{5}}{3}$

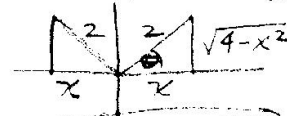


15. $\sin(\arctan \frac{x}{2})$ QI or IV.

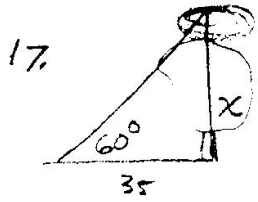


$\sin \theta = \frac{x}{\sqrt{x^2+4}}$

16. $\tan(\arccos \frac{x}{2})$ QI or II.



$\tan \theta = \frac{\sqrt{4-x^2}}{x}$

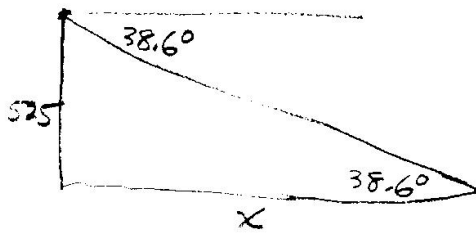


$$\tan 60^\circ = \frac{x}{35}$$

$$x = 35 \tan 60^\circ$$

$$= 35\sqrt{3} \approx 60.62 \text{ m.}$$

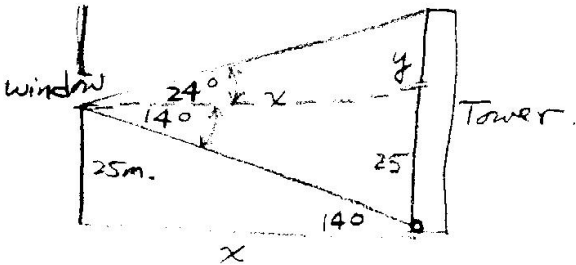
18.



$$\tan 38.6^\circ = \frac{525}{x}$$

$$x = \frac{525}{\tan 38.6^\circ} = 657.66 \text{ meters}$$

19.



$$\tan 14^\circ = \frac{25}{x} \quad x = \frac{25}{\tan 14^\circ} \approx 100.270$$

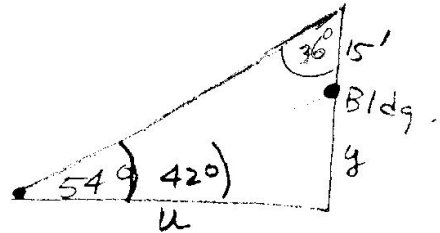
$$\tan 24^\circ = \frac{y}{x}$$

$$y = x \tan 24^\circ$$

$$= \frac{25 \tan 24^\circ}{\tan 14^\circ} = 44.64 \text{ m.}$$

$$\text{height} = 44.64 + 25 = 69.64 \text{ m.}$$

20.



$$\tan 54^\circ = \frac{15+y}{u} \quad \tan 42^\circ = \frac{y}{u}$$

Find y.

$$u = \frac{y}{\tan 42^\circ}$$

$$\tan 54^\circ = \frac{15+y}{\frac{y}{\tan 42^\circ}}$$

Solve

$$f(y) = \frac{(15+y)}{\left(\frac{y}{\tan 42^\circ}\right)} - \tan 54^\circ$$

$$y1 = \frac{(15+y)(\tan 42^\circ)}{y} - \tan 54^\circ$$

$$\text{Root: } x = 28.375 \text{ ft.} = y$$

$$\text{Bldg} = 28.375 + 15'$$

$$= 43.375'$$

$$20. \quad \tan 54^\circ = \frac{15+y}{u} \quad \tan 42^\circ = \frac{y}{u}$$

$$u = \frac{15+y}{\tan 54^\circ} \quad u = \frac{y}{\tan 42^\circ}$$

$$\frac{15+y}{\tan 54^\circ} = \frac{y}{\tan 42^\circ}$$

$$(15+y) \tan 42^\circ = y \tan 54^\circ$$

$$15 \tan 42^\circ + y \tan 42^\circ = y \tan 54^\circ$$

$$15 \tan 42^\circ = (y \tan 54^\circ - y \tan 42^\circ)$$

$$u = \frac{15 \tan 42^\circ}{\tan 54^\circ - \tan 42^\circ} = \rightarrow$$