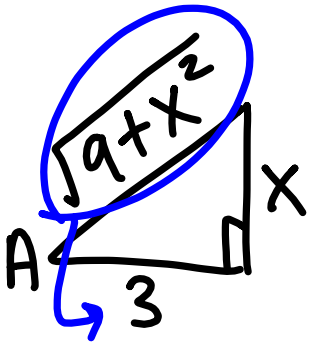
E22

5) $\dfrac{1}{x^2\sqrt{9+x^2}}$

$x = 3\tan A$

$\tan A = \dfrac{x}{3}$




$\cos A = \dfrac{3}{\sqrt{9+x^2}}$

$\dfrac{1}{(3\tan A)^2 3}\cdot\dfrac{\cos A}{\cos A}$

$\dfrac{\cos A}{27\tan^2 A}$

$\dfrac{\cos A}{3} = \dfrac{1}{\sqrt{9+x^2}}$

Ex

h) 8 cycl./sec $y = a\cos b(x)$

ampl. 40 $y = 40\cos(16\pi x)$

$t=0 \rightarrow$ max.

$$\frac{8 \text{ cycl.}}{1 \text{ sec}} = \frac{b}{2\pi} \quad b = 16\pi$$

E22

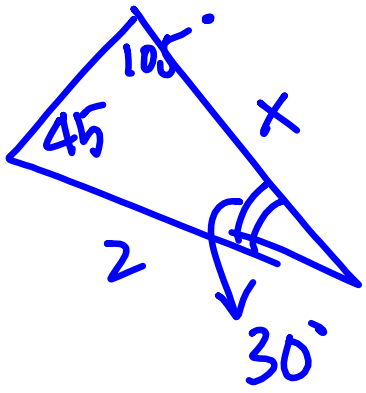
7) $\sum_{i=1}^{10}\left(\sum_{j=1}^{10} ij\right) = \sum_{i=1}^{10} 55i = 55 + 55\cdot 2 + 55\cdot 3 + \cdots + 55\cdot 10$

$\hookrightarrow i + 2i + 3i + \cdots + 10i = 55\cdot 55$

$= 3025$

E22

B)




$\sin 105^\circ = \sin 75^\circ$

$= \frac{\sqrt{6}+\sqrt{2}}{4}$

$\frac{x}{\sin 45} = \frac{2}{\sin 105}$

$x = \frac{2 \sin 45}{\sin 105^\circ}$

$= \frac{\sqrt{2} \cdot 4}{\sqrt{6}+\sqrt{2}} = \frac{4}{\sqrt{3}+1}$

$= 2\sqrt{3} - 2$

$A = \frac{1}{2} ab \sin C = \frac{1}{2}(2)(2\sqrt{3}-2)\frac{1}{2}$

$= \sqrt{3} - 1$

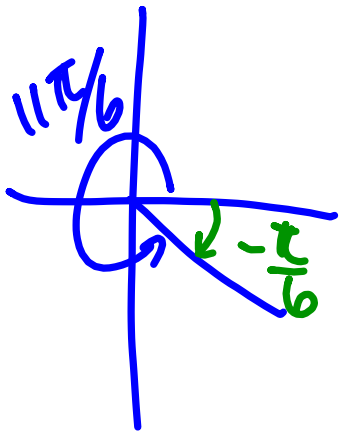
E21

$-\frac{\pi}{2} < \arctan k < \frac{\pi}{2}$

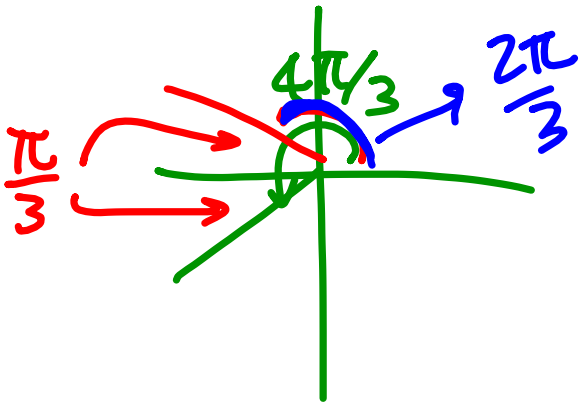
7b)

$$\arctan\left(\tan\frac{11\pi}{6}\right)$$

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

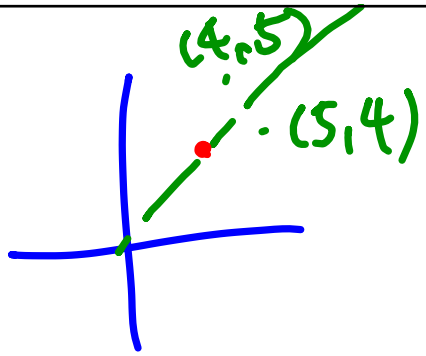



a) $\arccos\left(\cos\frac{4\pi}{3}\right)$ $0 \leq \arccos A \leq \pi$



E21 $y = x$

9) $f(x) = x + \sqrt{x-3}$



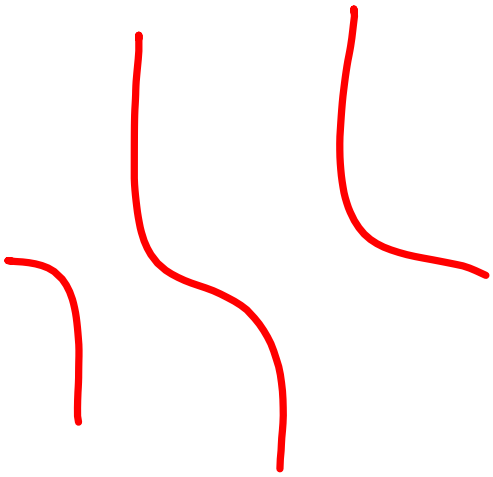

$g(f(x)) = x$ $\quad f(x) = g(x)$

$f(4) = 5$ $\quad x = x + \sqrt{x-3}$

$3 = x$

Ex 1

3



HA: $y=0$

VA: $x=-2,\ x=4$

$x$ int $\Rightarrow (0,0)$

$y$

$ax+b=0$

$\frac{b}{-8}=0 \rightarrow b=0$

$$f(x)=\frac{ax+b}{(x+2)(x-4)}$$

$$f(x)=\frac{ax}{(x+2)(x-4)}$$

#21

2) $y = \dfrac{2x^2 - 7x + 9}{2x - 3}$

$y = x - 2 + \dfrac{3}{2x - 3}$

$\frac{3}{2}$ | 2 −7 9

3 −6

2 −4 3

VA: $x = \frac{3}{2}$

OA: $y = x - 2$