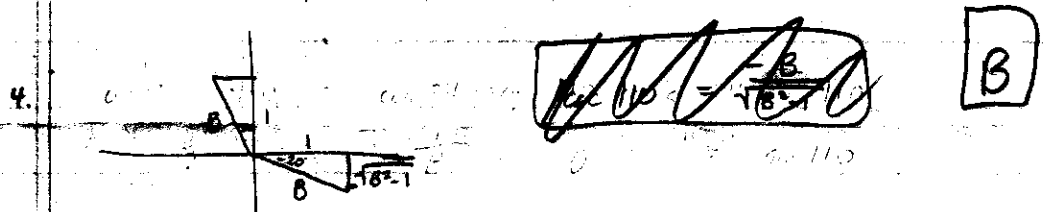


Martin County HS 1988

1.  $X = \cos(2 \operatorname{Arccos} \frac{\sqrt{3}}{2}) = \frac{1}{2}$   
~~1/2~~ 1/2 or  $\phi$   $\cos \operatorname{Arccos} X \cos 2 \operatorname{Arccos} \frac{\sqrt{3}}{2} - \sin \operatorname{Arccos} X \sin 2 \operatorname{Arccos} \frac{\sqrt{3}}{2}$   
 $X \cdot (-\frac{1}{2}) - \frac{\sqrt{3}}{2} \sin \operatorname{Arccos} X = \frac{\sqrt{3}}{3}$

2.  $x^2 - 4x + 4 = 0$   
x = 2

3.  $x - \sqrt{\sin^4 x + 2 \sin^2 x} = \sin^2 x - 2 \sin x + 1$   
 $\sin^4 x + 2 \sin^2 x = \sin^4 x + 4 \sin^2 x - 4 \sin^3 x$   
 $\frac{1}{2} \sin^2 x = 1 - 2 \sin x$   
x =  $\frac{\pi}{6}, \frac{5\pi}{6}$  0



5.  $\frac{BA+AB}{X} \cdot \frac{2AB-A^2+2B^2-AB}{X} = \frac{2B^2+AB-2BA-A^2}{X} \cdot \frac{X-BA}{X-AB+A^2}$   
 $\frac{2A+AB+AB-A}{X} = \frac{2AB}{X} = \square$

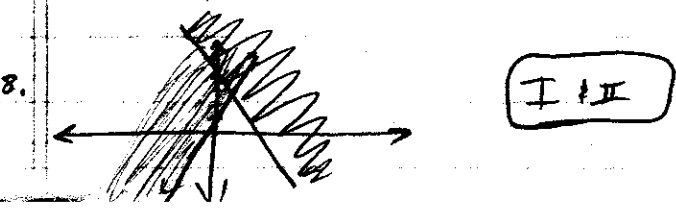
$f(x)(x-1) = x \cdot \frac{x}{x-1}$   
 $f(x)x - f(x) = x \cdot x = \frac{f(x)}{f(x)-1}$   
 $x(f(x)-1) = f(x)$   
 $f(x) \left[ 1 + \frac{2x}{3(x-1)} \right]$

6.  $f(x) = \frac{x}{x-1}$   $f(3x) = \frac{3x}{3x-1} = \frac{3x}{3(x-\frac{1}{3})} = \frac{x}{x-\frac{1}{3}}$   $k = \frac{x}{x-1}$   
 $k(x-\frac{1}{3}) = \frac{x}{x-1} \cdot \frac{x}{x-1}$   
 $k(x-\frac{1}{3}) = \frac{x^2}{(x-1)^2}$   
 $3k^3 - 3k^2 + 2k^2 = 0$

$\frac{3f(x)}{2f(x)+1}$   
 $\frac{3}{2} + \frac{2}{2} = \frac{5}{2}$

7.  $\log 46 - \log 23$   
 $\log \frac{46}{23}$   
 $\log 46 - \log 46 + \log 2 = \square .301$

$k = 1 + \frac{2}{3(x-1)}$



9.  $\cos^2 x + 2 \sin x \cos x + \sin^2 x + K \sin x \cos x - 1 = 0$

$K = -2$

10.  $\frac{\sin \frac{\theta}{2}}{\cos \frac{\theta}{2}} + \frac{\cos \frac{\theta}{2}}{\sin \frac{\theta}{2}}$

$\frac{\sin^2 \frac{\theta}{2} + \cos^2 \frac{\theta}{2}}{2 \cos \frac{\theta}{2} \sin \frac{\theta}{2}}$

$\frac{2}{\sin \theta} = 2 \csc \theta$

11.  $x^2 + \frac{144}{x^2} = 1$

$x^4 + 144 = x^2$

$x^4 - x^2 + 144 = 0$

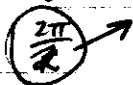
$x^2 = \frac{1 \pm \sqrt{1 - 4(144)}}{2}$



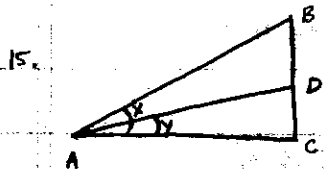
12.  $2 \cos \left( \cos \frac{\pi}{5} \sin \frac{3\pi}{5} - \cos \frac{3\pi}{5} \sin \frac{\pi}{5} \right) + 2 \cos \left[ \sin \frac{2\pi}{5} \cos \frac{3\pi}{5} + \sin \frac{3\pi}{5} \cos \frac{2\pi}{5} \right]$

13.  $x = 1$

14.  $y = \frac{1}{3} \cos 2\theta$



$\pi$



$\frac{AB \sin x \cos y}{\cos y} - \frac{AB \sin y \cos x}{\cos y}$

$\frac{AB}{AB} \frac{BC}{AB} - \frac{AB}{AB} \frac{DC}{AB} \cdot \frac{AC}{AB} \frac{AB}{AC}$

$BD$