Board Work Big polynomials

(1) $2\cos^2 x + \cos x - 1 = 0$

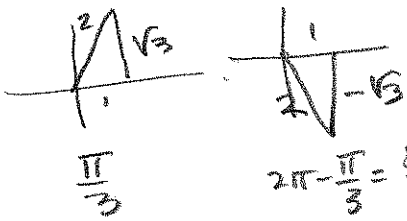
18 pts

$(2\cos x - 1)(\cos x + 1) = 0$

$2\cos x - 1 = 0$

$2\cos x = 1$

$\cos x = \frac{1}{2}$



$\frac{\pi}{3}$ $\quad 2\pi - \frac{\pi}{3} = \frac{5\pi}{3}$

$\cos x + 1 = 0$

$\cos x = -1$

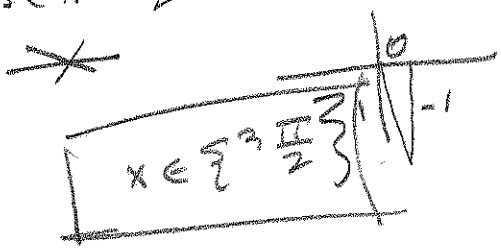
$x = \pi$

$x \in \{\pi, \frac{\pi}{3}, \frac{5\pi}{3}\}$

3pts

(2) $2\csc^2 x + \csc x - 1 = 0$

$\csc x = \frac{1}{2}$ $\quad \csc x = -1$



$x \in \{\frac{3\pi}{2}\}$

1pt

(3) $\cos^2 x - \sin^2 x = 0$

$\cos^2 x - (1 - \cos^2 x) = 0$

$2\cos^2 x - 1 = 0$

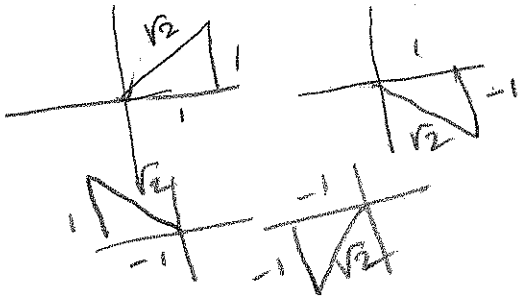
$2\cos^2 x = 1$

$\cos^2 x = \frac{1}{2}$

$\cos x = \pm \frac{1}{\sqrt{2}}$

4pts

$x \in \{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\}$

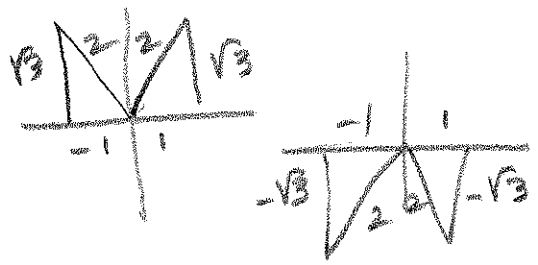


201 Board WK

(4) $\tan^2 x - 3 = 0$

$\tan^2 x = 3$

$\tan x = \pm\sqrt{3}$



4 pts

$x \in \left\{\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}\right\}$

(5) $\cot^2 x - 3 = 0$

$\cot^2 x = 3$

$\cot x = \pm\sqrt{3}$

4 pts

$x \in \left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\right\}$

Find y':

$x^2y^3 - 5x\cos y = 2xy + 5\sin x$

$2xy^3 + 3x^2y^2y' - 5\cos y + 5x(\sin y)y' = 2y + 2xy' + 5\cos x$

$y'(3x^2y^2 + 5x\sin y - 2x) = -2xy^3 + 5\cos y + 2y + 5\cos x$

$$y' = \frac{-2xy^3 + 5\cos y + 2y + 5\cos x}{3x^2y^2 + 5x\sin y - 2x}$$

2 pts