

CALCULUS AB
WORKSHEET ON INVERSE TRIG FUNCTIONS

Work the following on notebook paper.
Find the derivative.

1. $f(x) = 3 \arcsin(5x)$

2. $y = \arccos(2x^3)$

3. $g(x) = \operatorname{arcsec}(3x)$

4. $f(x) = \arctan\left(\frac{x}{5}\right)$

5. $y = \frac{\arcsin(2x)}{x}$

6. $h(x) = x^2 \arctan(x^2)$

7. $p(x) = \cos(\arcsin x)$

8. $q(x) = \sec(\arctan x)$

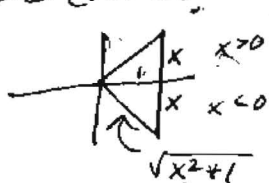
p377 13, 17, 21, 41 - 54 odd
61, 65
check answers in book!

9. Given $f(x) = -2 \arccos(x)$ Find the line tangent to the function when $x = -\frac{\sqrt{3}}{2}$

⑦ $p'(x) = \frac{\sin(\arcsin x) \left(\frac{1}{\sqrt{1-x^2}}\right)}{\sqrt{1-x^2}}$
 $= \frac{-x}{\sqrt{1-x^2}}$

⑤ $y' = \frac{x \left(\frac{2}{\sqrt{1-4x^2}}\right) - \arcsin(2x)}{x^2}$
 $= \frac{2x - \arcsin(2x)\sqrt{1-4x^2}}{x^2 \sqrt{1-4x^2}}$

⑧ $q'(x) = \sec(\arctan x) \tan(\arctan x) \left(\frac{1}{1+x^2}\right)$



$= \frac{(\sqrt{x^2+1})(x)}{1+x^2} = \frac{(x^2+1)^{1/2} x}{(x^2+1)^1}$

① $f'(x) = \frac{15}{\sqrt{1-25x^2}}$

② $y' = \frac{-6x^2}{\sqrt{1-4x^6}}$

③ $g'(x) = \frac{3}{3x\sqrt{9x^2-1}}$

④ $f'(x) = \frac{1/5}{1 + \frac{x^2}{25}} = \frac{5}{25+x^2}$

⑤ $y' = \frac{x \sin^{-1}(2x) - \frac{2}{\sqrt{1-4x^2}}}{x^2} = \frac{x \sin^{-1}(2x) \sqrt{1-4x^2} - 2}{x^2 \sqrt{1-4x^2}}$

⑥ $h'(x) = x^2 \left(\frac{2x}{1+x^4}\right) + 2x \arctan(x^2)$
 $\frac{2x^3}{1+x^4} + 2x \tan^{-1}(x^2)$

⑥ $f'(x) = \frac{2}{\sqrt{1-x^2}}$
 $f'\left(-\frac{\sqrt{3}}{2}\right) = \frac{2}{\sqrt{1-\frac{3}{4}}} = 4$
 $f\left(-\frac{\sqrt{3}}{2}\right) = -2 \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right) = -2\left(\frac{5\pi}{6}\right) = -\frac{5\pi}{3}$
 $y + \frac{5\pi}{3} = 4\left(x + \frac{\sqrt{3}}{2}\right)$