AP CALCULUS AB –
DERIVATIVES INVOLVING THE INVERSE TRIGONOMETRIC FUNCTIONS

1) For $-1 < x < 1$, calculate

$$\frac{\mathrm{d}}{\mathrm{d}x}\left[\, x \sin^{-1} x + \sqrt{1-x^2}\,\right] =$$

2) For $-1 < x < 1$, calculate

$$\frac{\mathrm{d}}{\mathrm{d}x}\left[\, x \cos^{-1} x - \sqrt{1-x^2}\,\right] =$$

3) For all x, calculate

$$\frac{\mathrm{d}}{\mathrm{d}x}\left[\, x \tan^{-1} x - \frac{1}{2}\ln(1+x^2)\,\right] =$$

4) For all x, calculate

$$\frac{\mathrm{d}}{\mathrm{d}x}\left[\, x \cot^{-1} x + \frac{1}{2}\ln(1+x^2)\,\right] =$$

5) For $-\infty < x < -1$ or $1 < x < \infty$, calculate

$$\frac{\mathrm{d}}{\mathrm{d}x}\left[\, x \sec^{-1} x - \ln\left(\,|x| + \sqrt{x^2-1}\,\right)\right] =$$

6) For $-\infty < x < -1$ or $1 < x < \infty$, calculate

$$\frac{\mathrm{d}}{\mathrm{d}x}\left[\, x \csc^{-1} x + \ln\left(\,|x| + \sqrt{x^2-1}\,\right)\right] =$$