

## §5.

$$5.1. \quad y = \sin 5x \cos 2x = \frac{1}{2} [\sin 7x + \sin 3x]$$

$$\Rightarrow y'' = -\frac{1}{2} (49 \sin 7x + 9 \sin 3x).$$

$$5.2. \quad y = \frac{2x+1}{x^2+x-2} = \frac{1}{x-1} + \frac{1}{x+2}, \text{ do đó}$$

$$y'' = 2 \left[ \frac{1}{(x-1)^3} + \frac{1}{(x+2)^3} \right].$$

$$5.3. \quad y = \frac{x}{x^2-1} = \frac{1}{2} \left[ \frac{1}{x+1} + \frac{1}{x-1} \right]$$

$$\Rightarrow y' = \frac{1}{2} \left[ \frac{-1}{(x+1)^2} + \frac{-1}{(x-1)^2} \right]$$

$$\Rightarrow y'' = \left[ \frac{1}{(x+1)^3} + \frac{1}{(x-1)^3} \right].$$

$$5.4. \quad y = \frac{x+1}{x-2} = 1 + \frac{3}{x-2} \Rightarrow y' = \frac{-3}{(x-2)^2}; y'' = \frac{6}{(x-2)^3}.$$

$$5.5. \quad y'' = (2 - x^2) \sin x + 4x \cos x.$$

$$5.6. \quad y'' = \frac{2x^3 + 3x}{(1+x^2)\sqrt{1+x^2}}.$$

$$5.7. \quad y'' = (x^2 - 3) \cos x + 4x \sin x.$$

$$5.8. \quad y'' = -\frac{1}{4x\sqrt{x}}.$$

**5.9.**  $y = \frac{1}{4} \sin 2x + \frac{1}{4} \sin 4x - \frac{1}{4} \sin 6x;$

$$y'' = -\sin 2x - 4 \sin 4x + 9 \sin 6x.$$

**5.10.**  $y = -x - 1 + \frac{1}{1-x};$

$$y'' = \frac{2}{(1-x)^3}.$$

**5.11.**  $y'' = -4 \sin 2x - 4x \cos 2x.$

**5.12.**  $y'' = \frac{3}{4\sqrt{x^5}}.$

**5.13.**  $f'''\left(-\frac{\pi}{2}\right) = -9, f''(0) = 0, f''\left(\frac{\pi}{18}\right) = -\frac{9}{2}.$

**5.14.**  $g'''\left(-\frac{\pi}{2}\right) = 0, g'''\left(-\frac{\pi}{24}\right) = -16, g'''\left(\frac{2\pi}{3}\right) = 16\sqrt{3}.$