Indefinite Integrals Ex 19.2 Q15

$$\int \sqrt{x}\,(3-5x)\,dx$$

$$= 3\int \sqrt{x}\,dx - 5\int x^{\frac{3}{2}}dx$$

$$= \frac{3x^{\frac{3}{2}}}{\frac{3}{2}} - 5\frac{x^{\frac{5}{2}}}{\frac{5}{2}} + c$$

$$= 2x^{\frac{3}{2}} - 2x^{\frac{5}{2}} + c$$

Indefinite Integrals Ex 19.2 Q16

$$\int \frac{(x+1)(x-2)}{\sqrt{x}}dx$$

$$= \int \frac{x^2 - 2x + x - 2}{x^{\frac{1}{2}}}dx$$

$$= \int \frac{x^2 - x - 2}{x^{\frac{1}{2}}}dx$$

$$= \int \frac{x^2}{x^{\frac{1}{2}}}dx - \int x^{\frac{1}{2}}dx - 2\int x^{\frac{-1}{2}}dx$$

$$= \frac{2x^{\frac{5}{2}}}{5} - \frac{2x^{\frac{3}{2}}}{3} - 4x^{\frac{1}{2}} + c$$

$$\therefore \quad \int \frac{(x+1)(x-2)}{\sqrt{x}}dx = \frac{2}{5}x^{\frac{5}{2}} - \frac{2}{3}x^{\frac{3}{2}} - 4x^{\frac{1}{2}} + c$$

$$= \frac{2}{5}x^{\frac{5}{2}} - \frac{2x^{\frac{3}{2}}}{3} - 4\sqrt{x} + c$$

Indefinite Integrals Ex 19.2 Q17

$$\int \frac{x^5 + x^{-2} + 2}{x^2}dx$$

$$= \int \left(\frac{x^5}{x^2} + \frac{x^{-2}}{x^2} + \frac{2}{x^2}\right)dx$$

$$= \int x^3 dx + \int x^{-4} + 2\int x^{-2}dx$$

$$= \frac{x^4}{4} + \frac{x^{-3}}{-3} + \frac{2x^{-1}}{-1} + c$$

$$= \frac{x^4}{4} - \frac{x^{-3}}{3} - \frac{2}{x} + c$$

Indefinite Integrals Ex 19.2 Q18

$$\int (3x+4)^2 dx$$

$$= \int \left(9x^2 + 16 + 24x\right) dx$$
$$= 9\int x^2 dx + 16\int dx + 24\int x dx$$
$$= 9\frac{x^3}{3} + 16x + 24\frac{x^2}{2} + c$$
$$= 3x^3 + 16x + 12x^2 + c$$

$$\therefore \quad \int (3x+4)^2 = 3x^3 + 12x^2 + 16x + c$$

Indefinite Integrals Ex 19.2 Q19

$$\int \frac{2x^4 + 7x^3 + 6x^2}{x^2 + 2x} dx$$

$$= \int \frac{x\left(2x^3 + 7x^2 + 6x\right)}{x\left(x+2\right)} dx$$
$$= \int \frac{2x^3 + 7x^2 + 6c}{x+2} dx$$
$$= \int \frac{2x^3 + 4x^2 + 3x^2 + 6x}{(x+2)} dx$$
$$= \int \frac{2x^2(x+2) + 3x(x+2)}{(x+2)} dx$$
$$= \int \frac{(x+2)\left(2x^2 + 3x\right)}{x+2} dx$$
$$= \int \left(2x^2 + 3x\right) dx$$
$$= \int 2x^2 dx + \int 3x dx$$

$$= \frac{2}{3}x^3 + \frac{3}{2}x^2 + c$$

Indefinite Integrals Ex 19.2 Q20

$$\int \frac{5x^4 + 12x^3 + 7x^2}{x^2 + x} dx$$
$$= \int \frac{5x^4 + 7x^3 + 5x^3 + 7x^2}{x^2 + x} dx$$
$$= \int \frac{5x^3 + 7x^2 + 5x^2 + 7x}{x+1} dx$$
$$= \int \frac{5x^2(x+1) + 7x(x+1)}{x+1} dx$$
$$= \int \left(5x^2 + 7x\right) dx$$
$$= \frac{5x^3}{3} + \frac{7x^2}{2} + C$$

Indefinite Integrals Ex 19.2 Q21

$$\int \frac{\sin^2 x}{1+\cos x}dx$$

$$= \int \frac{1-\cos^2 x}{1+\cos x}dx$$
$$= \int \frac{(1-\cos x)(1+\cos x)}{(1+\cos x)}dx$$
$$= \int (1-\cos x)dx$$
$$= x - \sin x + c$$

********** END **********