

Evaluate the indefinite integral. Check your result by differentiation.

1)  $\int 2x^2 \sqrt{x^3+1} dx$        $u = x^3+1$   
 $\frac{du}{dx} = 3x^2$   
 $\frac{1}{3} du = x^2 dx$   
 $\int \frac{2}{3} \sqrt{u} \cdot \frac{1}{3} du = \frac{2}{9} \int u^{1/2} du$   
 $= \frac{2}{9} \cdot \frac{2}{3} u^{3/2} + C = \frac{4}{27} (x^3+1)^{3/2} + C$

2)  $\int 2x \sqrt{x^2-1} dx$        $u = x^2-1$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-1)^{3/2} + C$

3)  $\int 2x \sqrt{x^2+1} dx$        $u = x^2+1$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+1)^{3/2} + C$

4)  $\int 2x \sqrt{x^2-4} dx$        $u = x^2-4$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-4)^{3/2} + C$

5)  $\int 2x \sqrt{x^2+4} dx$        $u = x^2+4$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+4)^{3/2} + C$

6)  $\int 2x \sqrt{x^2-9} dx$        $u = x^2-9$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-9)^{3/2} + C$

7)  $\int 2x \sqrt{x^2+9} dx$        $u = x^2+9$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+9)^{3/2} + C$

8)  $\int 2x \sqrt{x^2-16} dx$        $u = x^2-16$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-16)^{3/2} + C$

9)  $\int 2x \sqrt{x^2+16} dx$        $u = x^2+16$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+16)^{3/2} + C$

10)  $\int 2x \sqrt{x^2-25} dx$        $u = x^2-25$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-25)^{3/2} + C$

11)  $\int 2x \sqrt{x^2+25} dx$        $u = x^2+25$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+25)^{3/2} + C$

12)  $\int 2x \sqrt{x^2-36} dx$        $u = x^2-36$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-36)^{3/2} + C$

13)  $\int 2x \sqrt{x^2+36} dx$        $u = x^2+36$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+36)^{3/2} + C$

14)  $\int 2x \sqrt{x^2-49} dx$        $u = x^2-49$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-49)^{3/2} + C$

15)  $\int 2x \sqrt{x^2+49} dx$        $u = x^2+49$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+49)^{3/2} + C$

16)  $\int 2x \sqrt{x^2-1} dx$        $u = x^2-1$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-1)^{3/2} + C$

17)  $\int 2x \sqrt{x^2+1} dx$        $u = x^2+1$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+1)^{3/2} + C$

18)  $\int 2x \sqrt{x^2-4} dx$        $u = x^2-4$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-4)^{3/2} + C$

19)  $\int 2x \sqrt{x^2+4} dx$        $u = x^2+4$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+4)^{3/2} + C$

20)  $\int 2x \sqrt{x^2-9} dx$        $u = x^2-9$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-9)^{3/2} + C$

21)  $\int 2x \sqrt{x^2+9} dx$        $u = x^2+9$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+9)^{3/2} + C$

22)  $\int 2x \sqrt{x^2-16} dx$        $u = x^2-16$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-16)^{3/2} + C$

23)  $\int 2x \sqrt{x^2+16} dx$        $u = x^2+16$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+16)^{3/2} + C$

24)  $\int 2x \sqrt{x^2-25} dx$        $u = x^2-25$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-25)^{3/2} + C$

25)  $\int 2x \sqrt{x^2+25} dx$        $u = x^2+25$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+25)^{3/2} + C$

26)  $\int 2x \sqrt{x^2-36} dx$        $u = x^2-36$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-36)^{3/2} + C$

27)  $\int 2x \sqrt{x^2+36} dx$        $u = x^2+36$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+36)^{3/2} + C$

28)  $\int 2x \sqrt{x^2-49} dx$        $u = x^2-49$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-49)^{3/2} + C$

29)  $\int 2x \sqrt{x^2+49} dx$        $u = x^2+49$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+49)^{3/2} + C$

30)  $\int 2x \sqrt{x^2-64} dx$        $u = x^2-64$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2-64)^{3/2} + C$

31)  $\int 2x \sqrt{x^2+64} dx$        $u = x^2+64$   
 $\frac{du}{dx} = 2x$   
 $\int \sqrt{u} du = \frac{2}{3} u^{3/2} + C = \frac{2}{3} (x^2+64)^{3/2} + C$