

Write without using trigonometric and inverse trig functions:

(a) $\sin(\arccos x)$

(b) $\tan(\arcsin x)$

(c) $\cos(\arcsin(\frac{x}{2}))$

(d) $\cos(\arctan(\frac{x}{3}))$

(e) $\sin(2 \arccos x)$

(f) $\cos(2 \arctan x)$

(g) $\tan(2 \arcsin x)$

(h) $\tan(2 \arccos(\frac{x}{2}))$

(i) $\sin(\arcsin x + \arctan x)$

(j) $\sin(2 \arctan(\frac{x}{4}))$

(k) $\cos(\arccos x - \operatorname{arccot} x)$

(l) $\sec(2 \operatorname{arccot} x)$

(m) $\sec(\arcsin x - \operatorname{arccot} x)$

(n) $\cot(2 \arcsin x)$

(o*) $\sin(3 \arccos x)$

(p*) $\cos(3 \arcsin(\frac{x}{2}))$

Solutions:

$$(a) \sqrt{1-x^2}$$

$$(b) \frac{x}{\sqrt{1-x^2}}$$

$$(c) \frac{\sqrt{4-x^2}}{2}$$

$$(d) \frac{3}{\sqrt{x^2+9}}$$

$$(e) 2x\sqrt{1-x^2}$$

$$(f) \frac{1-x^2}{1+x^2}$$

$$(g) \frac{2x\sqrt{1-x^2}}{1-2x^2}$$

$$(h) \frac{x\sqrt{4-x^2}}{x^2-2}$$

$$(i) \frac{x(1+\sqrt{1-x^2})}{\sqrt{1+x^2}}$$

$$(j) \frac{8x}{x^2+16}$$

$$(k) \frac{x^2+\sqrt{1-x^2}}{\sqrt{1+x^2}}$$

$$(l) \frac{x^2+1}{x^2-1}$$

$$(m) \frac{\sqrt{1+x^2}}{x(1+\sqrt{1-x^2})}$$

$$(n) \frac{1-2x^2}{2x\sqrt{1-x^2}}$$

$$(o^*) \sqrt{1-x^2}(4x^2-1)$$

$$(p^*) \frac{\sqrt{4-x^2}(1-x^2)}{2}$$