Question

Find the radian measures of the angles whose sine is –0.8. Round to the nearest hundredth

–0.93 + 2πn and 2.21 + 2πn

–0.93 + 2πn and 5.36 + 2πn

–0.93 + 2πn and 4.07 + 2πn

–0.93 + 2πn and 5.36 + πn

please explain i dont get it and all the answers i find are like a damn foreign language

Solution

Recall that
$$\arcsin(-0.8) = -0.93,$$
where arcsin is the inverse of the sine;
$$\sin(x) = -0.8$$
is an equation with the following solution:
$$x = (-1)^k \arcsin(-0.8) + k\pi,$$
where k is integer, $\pi \approx 3.14$.

We get that

$$x = (-1)^{2n}\arcsin(-0.8) + 2n\pi = -0.93 + 2\pi n$$
is a solution when k is even, n is integer,

and

$$x = (-1)^{2n+1} \arcsin(-0.8) + (2n+1)\pi = (-1)^1 \cdot \arcsin(-0.8) + \pi + 2n\pi$$
$$= -(-0.93) + 3.14 + 2\pi n = 4.07 + 2\pi n$$
is a solution when k is odd, n is integer.

Answer: $x = -0.93 + 2\pi n$ and $x = 4.07 + 2\pi n$.