

Trigonometría

RAZONES TRIGONOMETRICAS DE ANGULOS COMPLEMENTARIOS

Sea el triángulo rectángulo ABC, recto en C ($\angle C = 90^\circ$)

Luego:

$$\sin \alpha = \cos \beta$$

Como:

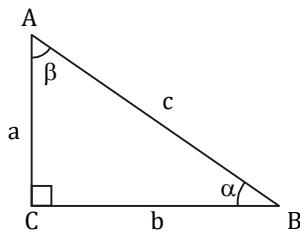
$$\alpha + \beta = 90^\circ$$

de forma análoga:

a y b son ángulos complementarios.

$$\tan \alpha = \cot \beta$$

$$\sec \alpha = \csc \beta$$



Importante

Entonces:

Seno y coseno son co-razones.

Tangente y cotangente son co-razones.

Secante y cosecante son co-razones.

$$\sin \alpha = \frac{a}{c}; \cos \beta = \frac{a}{c}$$

Resolviendo en clase

1 Calcular “a” si:

$$\operatorname{sen}a = \cos 50^\circ$$

Resolución:

3 Determinar “q” si:

$$\sec(20^\circ - 3\theta) = \csc(4\theta + 10^\circ)$$

Resolución:

Rpta:

2 Calcular “q” si:

$$\operatorname{tg}2\theta = \operatorname{ctg}80^\circ$$

Resolución:

Rpta:

4 Calcular “3a” si:

$$\operatorname{sen}(\alpha + 45^\circ) = \cos(2\alpha - 15^\circ)$$

Resolución:

Rpta:

Rpta:

5 Calcular $\operatorname{sen} q$ si:

$$\operatorname{tg}(\theta + 20^\circ) = \operatorname{ctg}(2\theta - 20^\circ)$$

Resolución:

6 Determinar "x" si:

$$\sec(x - 30^\circ) - \csc(2x - 60^\circ) = 0$$

Resolución:

Rpta:

Rpta:

Ahora en tu cuaderno

7. Determinar:

$$E = \frac{\operatorname{sen} 10^\circ}{\cos 80^\circ} + 2 \frac{\sec 20^\circ}{\csc 70^\circ}$$

8. Calcular:

$$H = 2 \frac{\operatorname{tg}(x + 50^\circ)}{\operatorname{ctg}(40^\circ - x)}$$

9. Determinar:

$$E = 3 \frac{\operatorname{sen} 52^\circ}{\cos 38^\circ} - \frac{\operatorname{tg} 83^\circ}{\operatorname{ctg} 7^\circ}$$

10. Calcular "a" si:

$$\sec 20^\circ \cdot \operatorname{sen}(2\alpha + 10^\circ) = \cos(\alpha + 20^\circ) \cdot \csc 70^\circ$$

11. Determinar "x" si:

$$\sec(2x + 60^\circ) = \csc(80^\circ + 3x)$$

12. Calcular "b" si:

$$\cos(2\beta - 30^\circ) - \operatorname{sen}(2\beta + 30^\circ) = 0$$

Para reforzar

1. Calcular "a" si:

$$\operatorname{sen} \alpha = \cos 40^\circ$$

- | | | |
|-------|-------|-------|
| a) 35 | b) 40 | c) 45 |
| d) 50 | e) 55 | |

2. Determinar "b" si:

$$\operatorname{tg}(3\beta + 20^\circ) = \operatorname{ctg}(2\beta + 20^\circ)$$

- | | | |
|--------|--------|--------|
| a) 8° | b) 9° | c) 10° |
| d) 11° | e) 12° | |

3. Calcular "3b" si:

$$\operatorname{sen}(2\beta - 30^\circ) = \cos(3\beta - 30^\circ)$$

- | | | |
|--------|--------|--------|
| a) 75° | b) 80° | c) 85° |
| d) 90° | e) 95° | |

4. Calcular $\operatorname{tg} q$ si:

$$\operatorname{tg}(2\theta - 45^\circ) = \operatorname{ctg}(\theta + 45^\circ)$$

- | | | |
|-----------------|-----------------|-----------------|
| a) $\sqrt{1}/1$ | b) $\sqrt{2}/2$ | c) $\sqrt{3}/3$ |
| d) $\sqrt{4}/4$ | e) $\sqrt{5}/5$ | |

5. Calcular "a" si:

$$E = \frac{4\operatorname{tg} 10^\circ}{\operatorname{ctg} 80^\circ} - \frac{2\operatorname{sen} 40^\circ}{\cos 50^\circ}$$

- | | | |
|------|------|------|
| a) 1 | b) 2 | c) 3 |
| d) 4 | e) 5 | |

6. Calcular "x" si:

$$\sec(4x - 30^\circ) = \csc(50^\circ - 3x)$$

- | | | |
|--------|--------|--------|
| a) 30° | b) 50° | c) 60° |
| d) 70° | e) 40° | |

7. Calcular "x" si:

$$\operatorname{sen}(x + 10^\circ) - \cos(x - 20^\circ) = 0$$

- | | | |
|--------|--------|--------|
| a) 10° | b) 50° | c) 20° |
| d) 30° | e) 40° | |

8. Determinar:

$$K = 4 \frac{\cos 50^\circ}{\operatorname{sen} 40^\circ} - 2 \frac{\operatorname{tg} 30^\circ}{\operatorname{ctg} 60^\circ}$$

- | | | |
|------|------|------|
| a) 3 | b) 2 | c) 4 |
| d) 1 | e) 5 | |

9. Calcular "x":

$$\operatorname{cos}(2x + 10^\circ) = \operatorname{sen}(x + 20^\circ)$$

- | | | |
|--------|--------|--------|
| a) 10° | b) 20° | c) 30° |
| d) 60° | e) 50° | |

10. Calcular "x" si:

$$\operatorname{sen} 40^\circ \cdot \operatorname{tg}(x - 10^\circ) = \cos 50^\circ \cdot \operatorname{ctg}(x + 10^\circ)$$

- | | | |
|--------|--------|--------|
| a) 10° | b) 40° | c) 30° |
| d) 45° | e) 35° | |

11. Calcular "q" si:

$$\operatorname{tg}(30^\circ + 2\theta) = \operatorname{ctg}(20^\circ - \theta)$$

- | | | |
|--------|--------|--------|
| a) 50° | b) 60° | c) 30° |
| d) 40° | e) 20° | |

12. Determinar "x" si:

$$\sec(5x + 20^\circ) = \csc(40^\circ - 3x)$$

- | | | |
|--------|--------|--------|
| a) 20° | b) 15° | c) 30° |
| d) 60° | e) 10° | |