

	Navn:	Skole:		
	Klasse: 20		Dato: 5. marts 2023	Fag: Matematik A

## Opgave 010

**Opg 11**

$|AB| = 7$   
 $|BC| = 5$   
 $|AC| = 6$

$a^2 = b^2 + c^2 - 2bc \cos(A)$   
 $7^2 = 5^2 + 6^2 - 2 \cdot 5 \cdot 6 \cdot \cos(A)$   
 $49 = 25 + 36 - 60 \cos(A)$   
 $49 = 61 - 60 \cos(A)$   
 $-12 = -60 \cos(A)$   
 $\cos(A) = \frac{12}{60} = \frac{1}{5}$   
 $A = \arccos\left(\frac{1}{5}\right) \approx 78.4^\circ$   
 $A = 25$

**Opg 12**

$|AC| = 6$   
 $|BC| = 8$   
 $|AB| = 9$   
 $x = \frac{|AB|}{|AC|} = \frac{9}{6} = 1.5$   
 $|EF| = |BC| \cdot x = 8 \cdot 1.5 = 12$

**Opg 13**

$B = 96^\circ$   
 $|AD| = 120$   
 $C = 40^\circ$   
 $A = 180 - 96 - 40 = 44^\circ$   
 $A = 44$   
 $b = 263.03$   
 $\frac{b}{\sin(B)} = \frac{c}{\sin(C)}$   
 $b = \frac{c}{\sin(C)} \cdot \sin(B)$   
 $b = \frac{120}{\sin(40)} \cdot \sin(96)$

**Opg 14**

$A = 52.3^\circ$   
 $C = 131.5^\circ$   
 $S = c \cdot \sin A$   
 $S = 131.5 \cdot \sin 57.3$

**Opg 15**

$A(8,5)$   
 $Y = -X + 2$   
 $a_1 = -1$   
 $b_1 = 2$   
 $a_2 = 1$   
 $b_2 = -1$   
 $A_1 = a_2 \cdot A_1 + b_2$   
 $A_1 = 1 \cdot 8 + (-1) = 7$   
 $A_2 = a_1 \cdot A_2 + b_1$   
 $A_2 = (-1) \cdot 5 + 2 = -3$   
 $D = \sqrt{(8-7)^2 + (5-(-3))^2} = \sqrt{1 + 64} = \sqrt{65}$   
 $D = 4.95$

**Opg 16**

$C: (x-4)^2 + (y-5)^2 = 3^2$   
 $1: Y = X - 2$   
 $(x-4)^2 + (x-2-5)^2 = 3^2$   
 $(x-4)^2 + (x-7)^2 = 9$   
 $(x^2 - 8x + 16) + (x^2 - 14x + 49) = 9$   
 $2x^2 - 22x + 65 = 9$   
 $2x^2 - 22x + 56 = 0$   
 $x^2 - 11x + 28 = 0$   
 $(x-4)(x-7) = 0$   
 $x_1 = 4$   
 $x_2 = 7$   
 $y_1 = 4 - 2 = 2$   
 $y_2 = 7 - 2 = 5$   
 $P_1(4, 2)$   
 $P_2(7, 5)$

**Opg 17**

$C: (x-2)^2 + (y-3)^2 = 5^2$   
 $X = 2$   
 $Y = 3$   
 $2x + y - 7 = 0$   
 $2 \cdot 2 + 3 - 7 = 0$   
 $7 - 7 = 0$   
 $0 = 0$

**Opg 18**

$x = 2$   
 $y = 3$   
 $2x + y - 7 = 0$   
 $2 \cdot 2 + 3 - 7 = 0$   
 $7 - 7 = 0$   
 $0 = 0$

**Opg 19**

$b = 4$   
 $P(2, 0)$   
 $Y = aX + b$   
 $0 = 2a + 4$   
 $-4 = 2a$   
 $a = -2$   
 $Y = -2X + 4$

**Opg 20**

$a(4)$   
 $|a| = \sqrt{x^2 + y^2}$   
 $= \sqrt{4^2 + 12^2}$   
 $= \sqrt{16 + 144}$   
 $= \sqrt{160}$   
 $= 4\sqrt{10}$