

COMPITO 1

1. $2 \left[x^2 \arctan \frac{1}{x} + x - \arctan x \right] + 7$
 2. $y(x) = -\frac{1}{14 \left[\frac{x\sqrt{x}}{3} - \sqrt{x} + \arctan \sqrt{x} \right] + 1}$
 3. $A = \{(x, y) \in \mathbb{R}^2 : x > -2, x \neq -1, y \neq k\pi\}$
 4. minimo locale se $\alpha < 0 \cup \alpha > 2$, massimo se $0 < \alpha < 2$, sella se $\alpha = 0$ e $\alpha = 2$.
 5. $m = 5/6$ e $M = 9$
 6. $(-2, 2)$.
 7. $14\pi^2$
 8. -1
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COMPITO 2

1. $3 \left[x^2 \arctan \frac{1}{x} + x - \arctan x \right] + 6$
 2. $y(x) = -\frac{1}{12 \left[\frac{x\sqrt{x}}{3} - \sqrt{x} + \arctan \sqrt{x} \right] + 1}$
 3. $A = \{(x, y) \in \mathbb{R}^2 : x > -3, x \neq -2, y \neq k\pi\}$
 4. minimo locale se $\alpha < 0 \cup \alpha > 3$, massimo se $0 < \alpha < 3$, sella se $\alpha = 0$ e $\alpha = 3$.
 5. $m = 8/9$ e $M = 12$
 6. $(-3, 3)$.
 7. $12\pi^2$
 8. -4
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COMPITO 3

1. $4 \left[x^2 \arctan \frac{1}{x} + x - \arctan x \right] + 5$
2. $y(x) = -\frac{1}{10 \left[\frac{x\sqrt{x}}{3} - \sqrt{x} + \arctan \sqrt{x} \right] + 1}$
3. $A = \{(x, y) \in \mathbb{R}^2 : x > -4, x \neq -3, y \neq k\pi\}$
4. minimo locale se $\alpha < 0 \cup \alpha > 4$, massimo se $0 < \alpha < 4$, sella se $\alpha = 0$ e $\alpha = 4$.
5. $m = 11/12$ e $M = 15$
6. $(-4, 4)$.
7. $10\pi^2$

COMPITO 4

1. $5 \left[x^2 \arctan \frac{1}{x} + x - \arctan x \right] + 4$
2. $y(x) = -\frac{1}{8 \left[\frac{x\sqrt{x}}{3} - \sqrt{x} + \arctan \sqrt{x} \right] + 1}$
3. $A = \{(x, y) \in \mathbb{R}^2 : x > -5, x \neq -4, y \neq k\pi\}$
4. minimo locale se $\alpha < 0 \cup \alpha > 5$, massimo se $0 < \alpha < 5$, sella se $\alpha = 0$ e $\alpha = 5$.
5. $m = 14/15$ e $M = 18$
6. $(-5, 5)$.
7. $8\pi^2$
8. -16

COMPITO 5

1. $6 \left[x^2 \arctan \frac{1}{x} + x - \arctan x \right] + 3$
2. $y(x) = -\frac{1}{6 \left[\frac{x\sqrt{x}}{3} - \sqrt{x} + \arctan \sqrt{x} \right] + 1}$
3. $A = \{(x, y) \in \mathbb{R}^2 : x > -6, x \neq -5, y \neq k\pi\}$
4. minimo locale se $\alpha < 0 \cup \alpha > 6$, massimo se $0 < \alpha < 6$, sella se $\alpha = 0$ e $\alpha = 6$.
5. $m = 17/18$ e $M = 21$
6. $(-6, 6)$.
7. $6\pi^2$
8. -25

COMPITO 6

1. $7 \left[x^2 \arctan \frac{1}{x} + x - \arctan x \right] + 2$
 2. $y(x) = -\frac{1}{4 \left[\frac{x\sqrt{x}}{3} - \sqrt{x} + \arctan \sqrt{x} \right] + 1}$
 3. $A = \{(x, y) \in \mathbb{R}^2 : x > -7, x \neq -6, y \neq k\pi\}$
 4. minimo locale se $\alpha < 0 \cup \alpha > 7$, massimo se $0 < \alpha < 7$, sella se $\alpha = 0$ e $\alpha = 7$.
 5. $m = 20/21$ e $M = 24$
 6. $(-7, 7)$.
 7. $4\pi^2$
 8. -36
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