

Esercizi su: Integrali indefiniti.

1. Calcola l'area compresa tra le seguenti funzioni.

- (a) $y = x^2 - 13x + 46$; $y = x - 2$ [(6, 4); (8, 6); $-4/3$]
- (b) $y = -x^2 - 8x - 4$; $y = -x + 2$ [(-6, 8); (-1, 3); $125/6$]
- (c) $y = -\frac{3}{2}x^2 + \frac{21}{2}x - 9$; $y = 0$ [(1, 0); (6, 0); $125/4$]
- (d) $y = -\frac{7}{3}x^2 + \frac{56}{3}x - 28$; $y = 0$ [(2, 0); (6, 0); $224/9$]
- (e) $y = -2x^2 + \frac{47}{2}x - 60$; $y = -\frac{1}{2}x + 4$ [(4, 2); (8, 0); $64/3$]
- (f) $y = \frac{1}{4}x^2 - \frac{9}{4}x + \frac{19}{2}$; $y = 6$ [(2, 6); (7, 6); $-125/24$]
- (g) $y = -\frac{5}{2}x^2 + \frac{33}{2}x - 20$; $y = \frac{3}{2}x$ [(2, 3); (4, 6); $10/3$]
- (h) $y = -\frac{7}{24}x^2 + \frac{29}{12}x + 1$; $y = \frac{2}{3}x + 1$ [(0, 1); (6, 5); $21/2$]
- (i) $y = -\frac{1}{2}x^2 - \frac{19}{2}x - 39$; $y = -\frac{3}{2}x - 9$ [(-10, 6); (-6, 0); $16/3$]
- (j) $y = -\frac{8}{3}x^2 + \frac{7}{3}x + 9$; $y = -\frac{1}{3}x + \frac{11}{3}$ [(-1, 4); (2, 3); 12]
- (k) $y = -\frac{3}{2}x^2 + \frac{3}{2}x + 10$; $y = -\frac{3}{2}x + \frac{11}{2}$ [(-1, 7); (3, 1); 16]
- (l) $y = -\frac{7}{108}x^2 + \frac{5}{36}x + 9$; $y = -\frac{1}{4}x + \frac{29}{4}$ [(-3, 8); (9, 5); $56/3$]
- (m) $y = -\frac{17}{104}x^2 - \frac{19}{104}x + 9$; $y = \frac{4}{13}x + \frac{32}{13}$ [(-8, 0); (5, 4); $2873/48$]
- (n) $y = -\frac{6}{5}x^2 + \frac{2}{5}x + \frac{48}{5}$; $y = -\frac{4}{5}x + \frac{12}{5}$ [(-2, 4); (3, 0); 25]
- (o) $y = -\frac{8}{15}x^2 + \frac{77}{15}x - \frac{23}{5}$; $y = \frac{7}{5}x - \frac{7}{5}$ [(1, 0); (6, 7); $100/9$]
- (p) $y = -\frac{17}{12}x^2 + \frac{115}{12}x - \frac{9}{2}$; $y = -\frac{7}{4}x + \frac{25}{2}$ [(2, 9); (6, 2); $136/9$]
- (q) $y = -\frac{5}{27}x^2 + \frac{31}{27}x + \frac{163}{27}$; $y = \frac{2}{9}x + \frac{31}{9}$ [(-2, 3); (7, 5); $45/2$]
- (r) $y = -\frac{1}{90}x^2 - \frac{43}{90}x + \frac{98}{15}$; $y = -\frac{5}{9}x + \frac{58}{9}$ [(-1, 7); (8, 2); $27/20$]
- (s) $y = -\frac{19}{42}x^2 + \frac{101}{42}x + \frac{41}{7}$; $y = \frac{1}{7}x + \frac{22}{7}$ [(-1, 3); (6, 4); $931/36$]
- (t) $y = -\frac{20}{21}x^2 + \frac{214}{21}x - \frac{102}{7}$; $y = -\frac{2}{7}x + \frac{18}{7}$ [(2, 2); (9, 0); $490/9$]
- (u) $y = -\frac{1}{13}x^2 - \frac{6}{13}x + \frac{118}{13}$; $y = -\frac{1}{13}x + \frac{82}{13}$ [(-9, 7); (4, 6); $169/6$]
- (v) $y = -\frac{47}{84}x^2 + \frac{565}{84}x - \frac{157}{14}$; $y = \frac{4}{7}x - \frac{8}{7}$ [(2, 0); (9, 4); $2303/72$]
- (w) $y = -\frac{19}{30}x^2 + \frac{67}{30}x + \frac{92}{5}$; $y = -\frac{3}{10}x + \frac{51}{10}$ [(-3, 6); (7, 3); $950/9$]
- (x) $y = -\frac{12}{77}x^2 - \frac{43}{77}x + \frac{85}{11}$; $y = -\frac{1}{11}x + \frac{37}{11}$ [(-7, 4); (4, 3); $242/7$]
- (y) $y = -\frac{49}{120}x^2 + \frac{121}{120}x + \frac{193}{20}$; $y = -\frac{5}{8}x + \frac{19}{4}$ [(-2, 6); (6, 1); $1568/45$]

$$(z) y = -\frac{37}{273}x^2 - \frac{290}{273}x + \frac{584}{91}; \quad y = -\frac{5}{13}x + \frac{20}{13}$$

$$[(-9, 5); (4, 0); 6253/126]$$

2. Calcola l'area compresa tra le seguenti funzioni.

$$(a) y = -4x^2 + 28x - 39; \quad y = -2x^2 + 14x - 19 \quad [(2, 1); (5, 1); 9]$$

$$(b) y = -2x^2 + 29x - 97; \quad y = x^2 - 16x + 65 \quad [(6, 5); (9, 2); 27/2]$$

$$(c) y = -4x^2 - 71x - 306; \quad y = 3x^2 + 55x + 254 \quad [(-10, 4); (-8, 6); 28/3]$$

$$(d) y = \frac{5}{2}x^2 - \frac{45}{2}x + 52; \quad y = 3x^2 - 27x + 61 \quad [(3, 7); (6, 7); 9/4]$$

$$(e) y = \frac{3}{2}x^2 - \frac{41}{2}x + 72; \quad y = 2x^2 - 28x + 99 \quad [(6, 3); (9, 9); 9/4]$$

$$(f) y = \frac{1}{2}x^2 + \frac{7}{2}x + 6; \quad y = \frac{3}{2}x^2 + \frac{11}{2}x + 6 \quad [(-2, 1); (0, 6); 4/3]$$

$$(g) y = -\frac{5}{6}x^2 + \frac{73}{6}x - 35; \quad y = \frac{1}{6}x^2 - \frac{5}{6}x + 5 \quad [(5, 5); (8, 9); 9/2]$$

$$(h) y = -\frac{5}{18}x^2 + \frac{9}{2}x - 10; \quad y = -\frac{1}{18}x^2 + \frac{11}{6}x - 4 \quad [(3, 1); (9, 8); 8]$$

$$(i) y = \frac{1}{6}x^2 - \frac{19}{6}x + 17; \quad y = \frac{2}{3}x^2 - \frac{23}{3}x + 26 \quad [(3, 9); (6, 4); 9/4]$$

$$(j) y = -\frac{3}{2}x^2 + \frac{37}{2}x - 50; \quad y = \frac{1}{2}x^2 - \frac{11}{2}x + 20 \quad [(5, 5); (7, 6); 8/3]$$

$$(k) y = \frac{5}{24}x^2 - \frac{13}{12}x + 5; \quad y = \frac{11}{24}x^2 - \frac{19}{12}x + 3 \quad [(-2, 8); (4, 4); 9]$$

$$(l) y = -\frac{15}{2}x^2 + \frac{59}{2}x - 21; \quad y = -\frac{7}{2}x^2 + \frac{27}{2}x - 9 \quad [(1, 1); (3, 0); 16/3]$$

$$(m) y = -\frac{3}{2}x^2 + \frac{43}{2}x - 69; \quad y = \frac{11}{2}x^2 - \frac{153}{2}x + 267 \quad [(6, 6); (8, 7); 28/3]$$

$$(n) y = -\frac{3}{4}x^2 - \frac{21}{4}x + 6; \quad y = -\frac{5}{28}x^2 - \frac{19}{28}x + 6 \quad [(-8, 0); (0, 6); 1024/21]$$

$$(o) y = -\frac{11}{2}x^2 - \frac{109}{2}x - 126; \quad y = \frac{5}{2}x^2 + \frac{51}{2}x + 66 \quad [(-6, 3); (-4, 4); 32/3]$$

$$(p) y = \frac{1}{28}x^2 + \frac{47}{7}; \quad y = \frac{9}{56}x^2 + \frac{1}{4}x + \frac{5}{7} \quad [(-8, 9); (6, 8); 343/6]$$

$$(q) y = -\frac{2}{3}x^2 + 5x - \frac{10}{3}; \quad y = -\frac{1}{6}x^2 + \frac{5}{2}x - \frac{4}{3} \quad [(1, 1); (4, 6); 9/4]$$

$$(r) y = \frac{2}{3}x^2 - 8x + \frac{88}{3}; \quad y = \frac{13}{6}x^2 - \frac{49}{2}x + \frac{214}{3} \quad [(4, 8); (7, 6); 27/4]$$

$$(s) y = -\frac{7}{8}x^2 + \frac{13}{2}x - \frac{13}{8}; \quad y = \frac{1}{4}x^2 - \frac{5}{2}x + \frac{25}{4} \quad [(1, 4); (7, 1); 81/2]$$

$$(t) y = -\frac{1}{4}x^2 - \frac{3}{4}x + \frac{13}{2}; \quad y = \frac{3}{4}x^2 + \frac{29}{4}x + \frac{37}{2} \quad [(-6, 2); (-2, 7); 32/3]$$

$$(u) y = \frac{2}{45}x^2 + \frac{3}{5}x + \frac{44}{9}; \quad y = \frac{7}{45}x^2 + \frac{3}{5}x + \frac{19}{9} \quad [(-5, 3); (5, 9); 500/27]$$

$$(v) y = -\frac{13}{30}x^2 + \frac{17}{6}x - \frac{7}{5}; \quad y = -\frac{1}{10}x^2 + \frac{1}{2}x + \frac{3}{5} \quad [(1, 1); (6, 0); 125/18]$$

$$(w) y = -\frac{9}{98}x^2 + \frac{17}{98}x + \frac{454}{49}; \quad y = \frac{1}{14}x^2 + \frac{1}{2}x + \frac{10}{7} \quad [(-8, 2); (6, 7); 224/3]$$

$$(x) y = -\frac{16}{21}x^2 + \frac{44}{7}x - \frac{11}{21}; \quad y = -\frac{2}{21}x^2 + \frac{2}{7}x + \frac{101}{21} \quad [(1, 5); (8, 1); 343/9]$$

$$(y) y = -\frac{7}{120}x^2 - \frac{89}{120}x + \frac{27}{4}; \quad y = \frac{17}{120}x^2 - \frac{41}{120}x + \frac{15}{4} \quad [(-5, 9); (3, 4); 256/15]$$

$$(z) y = -\frac{34}{741}x^2 + \frac{161}{741}x + \frac{1917}{247}; \quad y = -\frac{11}{1482}x^2 + \frac{379}{1482}x + \frac{1062}{247}$$

$[(-10, 1); (9, 6); 6859/156]$

3. Calcola le aree comprese tra le seguenti funzioni.

$$(a) y = -\frac{14}{15}x^2 + \frac{37}{3}x - \frac{172}{5}; \quad y = \frac{1}{5}x - \frac{4}{5}$$

$[(4, 0); (9, 1); 175/9]$

$$(b) y = -4x^2 + 8; \quad y = 4$$

$[(-1, 4); (1, 4); 16/3]$

$$(c) y = -\frac{5}{6}x^2 - \frac{7}{6}x + 9; \quad y = \frac{4}{3}x + 9$$

$[(-3, 5); (0, 9); 15/4]$

$$(d) y = -\frac{1}{8}x^2 - \frac{5}{4}x + 3; \quad y = \frac{3}{16}x^2 + \frac{5}{2}x + \frac{37}{4}$$

$[(-10, 3); (-2, 5); 80/3]$

$$(e) y = -\frac{1}{9}x^2 + \frac{13}{9}x + \frac{14}{9}; \quad y = \frac{1}{3}x + \frac{10}{3}$$

$[(2, 4); (8, 6); 4]$

$$(f) y = -\frac{33}{280}x^2 - \frac{89}{140}x + \frac{59}{7}; \quad y = \frac{1}{14}x + \frac{26}{7}$$

$[(-10, 3); (4, 4); 539/10]$

$$(g) y = -\frac{5}{2}x^2 + \frac{57}{2}x - 74; \quad y = \frac{3}{2}x^2 - \frac{39}{2}x + 66$$

$[(5, 6); (7, 3); 16/3]$

$$(h) y = -\frac{4}{3}x^2 + \frac{8}{3}x + 7; \quad y = -\frac{5}{6}x^2 + \frac{7}{6}x + 7$$

$[(0, 7); (3, 3); 9/4]$

$$(i) y = -\frac{5}{108}x^2 + \frac{25}{36}x + \frac{7}{2}; \quad y = \frac{5}{12}x + \frac{9}{4}$$

$[(-3, 1); (9, 6); 40/3]$

$$(j) y = \frac{3}{2}x^2 + \frac{37}{2}x + 64; \quad y = \frac{11}{2}x^2 + \frac{133}{2}x + 204$$

$[(-7, 8); (-5, 9); 16/3]$

$$(k) y = \frac{7}{4}x^2 - 14x + 30; \quad y = 2x^2 - 16x + 33$$

$[(2, 9); (6, 9); 8/3]$

$$(l) y = -\frac{13}{84}x^2 - \frac{19}{84}x + 7; \quad y = -\frac{41}{420}x^2 - \frac{47}{420}x + 5$$

$[(-7, 1); (5, 2); 576/35]$

$$(m) y = -\frac{3}{2}x^2 - \frac{17}{2}x - 4; \quad y = -\frac{1}{2}x^2 - \frac{5}{2}x + 1$$

$[(-5, 1); (-1, 3); 32/3]$

$$(n) y = -\frac{1}{3}x^2 + \frac{17}{3}x - 20; \quad y = x - 5$$

$[(5, 0); (9, 4); 32/9]$

$$(o) y = -\frac{1}{6}x^2 - \frac{19}{6}x - 7; \quad y = -\frac{3}{2}x - \frac{7}{2}$$

$[(-7, 7); (-3, 1); 16/9]$

$$(p) y = -\frac{17}{18}x^2 + \frac{127}{18}x + 8; \quad y = \frac{4}{9}x + \frac{4}{9}$$

$[(-1, 0); (8, 4); 459/4]$

$$(q) y = -\frac{11}{84}x^2 + \frac{31}{12}x - \frac{65}{14}; \quad y = -\frac{1}{21}x^2 + \frac{5}{3}x - \frac{22}{7}$$

$[(2, 0); (9, 8); 343/72]$

$$(r) y = \frac{1}{231}x^2 + \frac{62}{231}x + \frac{403}{77}; \quad y = \frac{2}{7}x + \frac{38}{7}$$

$[(-5, 4); (9, 8); -196/99]$

$$(s) y = -\frac{1}{72}x^2 - \frac{1}{6}x + \frac{69}{8}; \quad y = \frac{13}{72}x^2 - \frac{4}{3}x + \frac{27}{8}$$

$[(-3, 9); (9, 6); 56]$

$$(t) y = -\frac{7}{10}x^2 + \frac{1}{2}x + \frac{49}{5}; \quad y = \frac{3}{10}x^2 - \frac{1}{2}x + \frac{19}{5}$$

$[(-2, 6); (3, 5); 125/6]$

$$(u) y = \frac{23}{468}x^2 + \frac{71}{156}x + \frac{409}{117}; \quad y = \frac{4}{13}x + \frac{71}{13}$$

$[(-8, 3); (5, 7); -3887/216]$

$$(v) y = -\frac{5}{3}x^2 + \frac{70}{3}x - 75; \quad y = \frac{5}{3}x - \frac{25}{3}$$

$[(5, 0); (8, 5); 15/2]$

$$(w) y = -\frac{1}{6}x^2 - \frac{1}{2}x + \frac{23}{3}; \quad y = -\frac{5}{6}x + \frac{19}{3}$$

$[(-2, 8); (4, 3); 6]$

$$(x) y = -\frac{1}{8}x^2 + \frac{57}{8}; \quad y = \frac{1}{2}x + \frac{9}{2}$$

$[(-7, 1); (3, 6); 125/6]$

$$(y) y = -\frac{1}{6}x^2 - \frac{1}{2}x + \frac{20}{3}; \quad y = \frac{5}{6}x^2 + \frac{9}{2}x + \frac{32}{3}$$

$[(-4, 6); (-1, 7); 9/2]$

$$(z) y = \frac{1}{4}x^2 - \frac{5}{2}x + \frac{41}{4}; \quad y = \frac{1}{2}x^2 - 5x + \frac{31}{2}$$

$[(3, 5); (7, 5); 8/3]$