Разноуровневые задания для 10 класса на тему «Тригонометрические формулы»

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1. $sin^2\ x + cos^2 x =$

1. $\text{tg}\, x$
2. $\text{ctg}\, x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\ y + 1}{ctg\ x - ctg\ y}$
7. $2 \sin x\ cosx$
8. $cos^2 x - sin^2 x$
9. $-\ \sin\ x$
10. $\cos\ x$
11. 1
12. $\dfrac{1}{cos^2 x}$
13. $\dfrac{\sin x}{\cos x}$
14. $\dfrac{tgx - tg\ y}{1 + tg\ x \cdot tg\ y}$
15. $\dfrac{1}{sin^2 x}$
16. $\dfrac{tgx + tg\ y}{1 - tg\ x \cdot tg\ y}$
17. $\sin x\ cosy + \cos x \sin y$
18. $\sin x\ cosy - \cos x \sin y$
19. $\cos x\ cosy + \sin x \sin y$
20. $\cos x\ cosy - \sin x \sin y$
21. $\dfrac{ctgx \cdot ctg\ y - 1}{ctg\ x + ctg\ y}$
22. $2\ sin^2 x$
23. $2cos^2\ x$
24. $\dfrac{\cos x}{\sin x}$
25. $-\ \text{tg}\ x$
26. $-\ \text{ctg}\ x$
27. $\dfrac{2tgx}{1 - tg^2 x}$

2. $1 + tg^2x =$

1. $\text{tg}\,x$
2. $\text{ctg}\,x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\,y + 1}{ctg\,x - ctg\,y}$
7. $2 \sin x \cos x$
8. $cos^2x - sin^2x$
9. $-\sin x$
10. $\cos x$
11. 1
12. $\dfrac{1}{cos^2x}$
13. $\dfrac{\sin x}{\cos x}$
14. $\dfrac{tgx - tg\,y}{1 + tg\,x \cdot tg\,y}$
15. $\dfrac{1}{sin^2x}$
16. $\dfrac{tgx + tg\,y}{1 - tg\,x \cdot tg\,y}$
17. $\sin x \cos y + \cos x \sin y$
18. $\sin x \cos y - \cos x \sin y$
19. $\cos x \cos y + \sin x \sin y$
20. $\cos x \cos y - \sin x \sin y$
21. $\dfrac{ctgx \cdot ctg\,y - 1}{ctg\,x + ctg\,y}$
22. $2\,sin^2x$
23. $2cos^2x$
24. $\dfrac{\cos x}{\sin x}$
25. $-\text{tg}\,x$
26. $-\text{ctg}\,x$
27. $\dfrac{2tgx}{1 - tg^2x}$

3. $1 + ctg^2 x =$

15. $\frac{1}{sin^2 x}$

16. $\frac{tgx + tg\,y}{1 - tg\,x \cdot tg\,y}$

1. $\text{tg}\,x$
2. $\text{ctg}\,x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

17. $\sin x\, cosy + \cos x \sin y$
18. $\sin x\, cosy - \cos x \sin y$
19. $\cos x\, cosy + \sin x \sin y$
20. $\cos x\, cosy - \sin x \sin y$

6. $\frac{ctgx \cdot ctg\,y + 1}{ctg\,x - ctg\,y}$

21. $\frac{ctgx \cdot ctg\,y - 1}{ctg\,x + ctg\,y}$

22. $2\,sin^2 x$

7. $2 \sin x\, cosx$
8. $cos^2 x - sin^2 x$

23. $2cos^2 x$

24. $\frac{\cos x}{\sin x}$

9. $-\sin x$
10. $\cos x$

25. $-\text{tg}\,x$

26. $-\text{ctg}\,x$

11. 1

13. $\frac{\sin x}{\cos x}$

14. $\frac{tgx - tg\,y}{1 + tg\,x \cdot tg\,y}$

27. $\frac{2tgx}{1 - tg^2 x}$

4. $tgx =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$
11. 1

13. $\dfrac{\sin x}{\cos x}$

14. $\dfrac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

16. $\dfrac{tgx + tg\, y}{1 - tg\, x \cdot tg\, y}$

17. $\sin x \cos y + \cos x \sin y$

18. $\sin x \cos y - \cos x \sin y$

19. $\cos x \cos y + \sin x \sin y$

20. $\cos x \cos y - \sin x \sin y$

21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

22. $2 \sin^2 x$

23. $2\cos^2 x$

24. $\dfrac{\cos x}{\sin x}$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

5. $ctgx =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$
11. 1

14. $\dfrac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

16. $\dfrac{tgx + tg\, y}{1 - tg\, x \cdot tg\, y}$
17. $\sin x \cos y + \cos x \sin y$
18. $\sin x \cos y - \cos x \sin y$
19. $\cos x \cos y + \sin x \sin y$
20. $\cos x \cos y - \sin x \sin y$
21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$
22. $2 sin^2 x$
23. $2cos^2 x$
24. $\dfrac{\cos x}{\sin x}$
25. $-\operatorname{tg} x$
26. $-\operatorname{ctg} x$
27. $\dfrac{2tgx}{1 - tg^2 x}$

6. $tgx \cdot ctg\, x =$

1. $\mathrm{tg}\, x$
2. $\mathrm{ctg}\, x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$
11. 1

14. $\dfrac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

16. $\dfrac{tgx + tg\, y}{1 - tg\, x \cdot tg\, y}$

17. $\sin x \cos y + \cos x \sin y$

18. $\sin x \cos y - \cos x \sin y$

19. $\cos x \cos y + \sin x \sin y$

20. $\cos x \cos y - \sin x \sin y$

21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

22. $2 sin^2 x$

23. $2cos^2 x$

25. $-\mathrm{tg}\, x$

26. $-\mathrm{ctg}\, x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

7. $\sin(x+y) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

14. $\dfrac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

16. $\dfrac{tgx + tg\, y}{1 - tg\, x \cdot tg\, y}$

17. $\sin x \cos y + \cos x \sin y$

18. $\sin x \cos y - \cos x \sin y$

19. $\cos x \cos y + \sin x \sin y$

20. $\cos x \cos y - \sin x \sin y$

21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

22. $2\, sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

8. $\cos(x-y) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

14. $\dfrac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

16. $\dfrac{tgx + tg\, y}{1 - tg\, x \cdot tg\, y}$

18. $\sin x \cos y - \cos x \sin y$

19. $\cos x \cos y + \sin x \sin y$

20. $\cos x \cos y - \sin x \sin y$

21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

22. $2 sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

9. $tg(x+y) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

14. $\dfrac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

16. $\dfrac{tgx + tg\, y}{1 - tg\, x \cdot tg\, y}$

18. $\sin x \cos y - \cos x \sin y$

20. $\cos x \cos y - \sin x \sin y$

21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

22. $2\, sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

10. $tg(x-y)=$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

18. $\sin x \cos y - \cos x \sin y$

20. $\cos x \cos y - \sin x \sin y$

21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

22. $2\, sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

14. $\dfrac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

11. $ctg(x+y) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

18. $\sin x \cos y - \cos x \sin y$

20. $\cos x \cos y - \sin x \sin y$

21. $\dfrac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

22. $2\, sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

12. $ctg(x-y) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$
6. $\dfrac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$
7. $2 \sin x \cos x$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

18. $\sin x \cos y - \cos x \sin y$

20. $\cos x \cos y - \sin x \sin y$

22. $2\, sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

13. $\sin(x-y) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

18. $\sin x \cos y - \cos x \sin y$

20. $\cos x \cos y - \sin x \sin y$

7. $2 \sin x \cos x$
8. $\cos^2 x - \sin^2 x$
9. $-\sin x$
10. $\cos x$

22. $2 \sin^2 x$

23. $2\cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1-tg^2x}$

14. $\cos(x+y) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

20. $\cos x \cos y - \sin x \sin y$

7. $2 \sin x \cos x$
8. $\cos^2 x - \sin^2 x$
9. $-\sin x$
10. $\cos x$

22. $2 \sin^2 x$

23. $2\cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1-tg^2x}$

15. $sin2x =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

22. $2\,sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

7. $2 \sin x \, cosx$
8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

16. $cos2x =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

22. $2\,sin^2 x$

23. $2cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

8. $cos^2 x - sin^2 x$
9. $-\sin x$
10. $\cos x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

17. $\sin(-x) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

9. $-\sin x$
10. $\cos x$

22. $2\sin^2 x$

23. $2\cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1-tg^2x}$

18. $\cos(-x) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

10. $\cos x$

22. $2\sin^2 x$

23. $2\cos^2 x$

25. $-\operatorname{tg} x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1-tg^2x}$

19. $\text{tg}(-x) =$

1. $\text{tg}\, x$
2. $\text{ctg}\, x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

22. $2\sin^2 x$

23. $2\cos^2 x$

25. $-\text{tg}\, x$

26. $-\text{ctg}\, x$

27. $\dfrac{2tgx}{1-tg^2x}$

20. $\operatorname{ctg}(-x) =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

22. $2 \sin^2 x$

23. $2\cos^2 x$

26. $-\operatorname{ctg} x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

21. $1 + cos2x =$

1. $\text{tg}\, x$
2. $\text{ctg}\, x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

22. $2\, sin^2 x$

23. $2cos^2 x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

22. $1 - cos2x =$

1. $\text{tg}\, x$
2. $\text{ctg}\, x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

22. $2\, sin^2 x$

27. $\dfrac{2tgx}{1 - tg^2 x}$

23. $tg2x =$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

27. $\dfrac{2tgx}{1 - tg^2x}$

1. $\operatorname{tg} x$
2. $\operatorname{ctg} x$
3. $-\cos x$
4. $\sin x$
5. $\sin x \sin y - \cos x \cos y$

1. $\sin^2 x + \cos^2 x = 1$

2. $1 + tg^2 x = \frac{1}{\cos^2 x}$

3. $1 + ctg^2 x = \frac{1}{\sin^2 x}$

4. $tgx = \frac{\sin x}{\cos x}$

5. $ctgx = \frac{\cos x}{\sin x}$

6. $tgx \cdot ctg\, x = 1$

7. $\sin(x + y) = \sin x \cos y + \cos x \sin y$

8. $\cos(x - y) = \cos x \cos y + \sin x \sin y$

9. $\cos(x + y) = \cos x \cos y - \sin x \sin y$

10. $\sin(x - y) = \sin x \cos y - \cos x \sin y$

11. $tg(x + y) = \frac{tgx + tg\, y}{1 - tg\, x \cdot tg\, y}$

12. $tg(x - y) = \frac{tgx - tg\, y}{1 + tg\, x \cdot tg\, y}$

13. $ctg(x + y) = \frac{ctgx \cdot ctg\, y - 1}{ctg\, x + ctg\, y}$

14. $ctg(x - y) = \frac{ctgx \cdot ctg\, y + 1}{ctg\, x - ctg\, y}$

15. $\sin(-x) = -\sin x$

16. $\cos(-x) = \cos x$

17. $\mathrm{tg}(-x) = -\mathrm{tg}\, x$

18. $\mathrm{ctg}(-x) = -\mathrm{ctg}\, x$

19. $\sin 2x = 2 \sin x \cos x$

20. $\cos 2x = \cos^2 x - \sin^2 x$

21. $1 + \cos 2x = 2\cos^2 x$

22. $1 - \cos 2x = 2 \sin^2 x$

23. $tg2x = \frac{2tgx}{1 - tg^2 x}$