O-Notation:

2011-12-16 B vgl. 2015-01-19 B:

2012-01-20 A vgl. 2013-12-16 A:

2012-01-20 B vgl. 2013-12-16 B

2013-12-16 A:

$$\frac{99}{2}n^3+e^{n-4}-7n = O\Big(\qquad \Big)$$

$$27\log(5n)n^2+4(\log n)^5 n = O\Big(\qquad \Big)$$

$$n^{4-n}+3n = O\Big(\qquad \Big)$$

$$(69n+\pi^n)^9 = O\Big(\qquad \Big)$$

Lösung:

$$\frac{99}{2}n^3+e^{n-4}-7n = O(e^n)$$

$$27\log(5n)n^2+4(\log n)^5 n = O(\log(n)n^2)$$

$$n^{4-n}+3n = O(n)$$

$$(69n+\pi^n)^9 = O(\pi^{9n})$$

2013-12-16 B:

$$4\log(5n)^5 n^2+27(\log n)n^2 = O\Big(\qquad \Big)$$

$$n^{3-n}+3n = O\Big(\qquad \Big)$$

$$(65n+\pi^n)^5 = O\Big(\qquad \Big)$$

$$\frac{99}{2}n^3+e^{n-3}-7n = O\Big(\qquad \Big)$$

Lösung:

$$4\log(5n)^5 n^2+27(\log n)n^2 = O((\log n)^5 n^2)$$

$$n^{3-n}+3n = O(n)$$

$$(65n+\pi^n)^5 = O(\pi^{5n})$$

$$\frac{99}{2}n^3+e^{n-3}-7n = O(e^n)$$

2014-01-20 A:

$$42n^{570} + (107^{20})^2 + 333^{6\pi n} = O(\quad)$$

$$\frac{700}{45}\pi + (e^{3!}38)^{7\pi} = O(\quad)$$

Lösung:

$$42n^{570} + (107^{20})^2 + 333^{6\pi n} = O(333^{6\pi n})$$

$$\frac{700}{45}\pi + (e^{3!}38)^{7\pi} = O(1)$$

2014-01-20 B:

$$(e^{3\pi}67)^{n+10} + 9n^2 = O(\quad)$$

$$265^{5\pi n} - \frac{66}{3}n^{270} + (50^{20})^3 = O(\quad)$$

Lösung:

$$(e^{3\pi}67)^{n+10} + 9n^2 = O((e^{3\pi}67)^n)$$

$$265^{5\pi n} - \frac{66}{3}n^{270} + (50^{20})^3 = O(265^{5\pi n})$$

2014-05-12 A ident **2014-01-20 A**

2014-12-16 A:

$$-42n^4 + 19n^2 + 469 = O(\quad)$$

$$\frac{99}{2}n^3 + e^{n-4} - 7n = O(\quad)$$

Lösung:

$$-42n^4 + 19n^2 + 469 = O(n^4)$$

$$\frac{99}{2}n^3 + e^{n-4} - 7n = O(e^n)$$

!!! negative Faktoren kommen nicht zur Prüfung.
Je nach verwendeter Definition der O-Notation kann diese Lösung falsch oder auch richtig sein. Größenordnung vom Wachstum ist aber $O(n^4)$

2014-12-16 B:

$$(69n + \pi^n)^9 \qquad = O(\qquad\qquad)$$

$$n^{4-n} + 3^n \qquad = O(\qquad\qquad)$$

Lösung:

$$(69n + \pi^n)^9 \qquad = O(\pi^{9n})$$

$$n^{4-n} + 3^n \qquad = O(3^n)$$

2015-01-19 A:

$$\frac{12}{n^6} + 794^6 n = O\Big(\qquad \Big)$$
$$(42^k - k)^{567k} \cdot n^{17k} = O\Big(\qquad \Big)$$

Lösung:

$$\frac{12}{n^6} + 794^6 n = O(n)$$
$$(42^k - k)^{567k} \cdot n^{17k} = O\Big(n^{17k}\Big)$$

2015-01-19 B:

$$-1^{n^{2n}} = O\Big(\qquad \Big)$$
$$73n + 27n^{13} = O\Big(\qquad \Big)$$

Lösung:

$$-1^{n^{2n}} = O(1)$$
$$73n + 27n^{13} = O(n^{13})$$

2015-03-06 A:

$$\frac{12}{n^6} + 794^6 n \qquad = O(\qquad)$$
$$73n^k + 27n^{13} \qquad = O(\qquad)$$
$$(42^k - k \ )^{567k} * n^{17k} \qquad = O(\qquad)$$

Lösung:

$$\frac{12}{n^6} + 794^6 n \qquad = O(\quad n \quad)$$
$73n^k + 27n^{13}$ $\qquad = O(n^k)$ für k > 13 und $O(n^{13})$ für k ≤ 13
$$(42^k - k \ )^{567k} * n^{17k} \qquad = O(\quad n^{17k} \quad)$$

2015-05-11 A:

$4\log(5n)^5 n^2 + \quad 27(\log n)\, n^2$	$= O(\qquad\qquad)$
$n^{3-n} + 3n$	$= O(\qquad\qquad)$
$(65n + \pi^n)^5$	$= O(\qquad\qquad)$
$\frac{99}{2}n^3 + e^{n-3} - 7n$	$= O(\qquad\qquad)$

Lösung:

Richtig wäre:
$O(\log(n)^5 n^2)$

$4\log(5n)^5 n^2 + \quad 27(\log n)\, n^2$	$= O(\log(5n)^5 n^2)$
$n^{3-n} + 3n$	$= O(n)$
$(65n + \pi^n)^5$	$= O(\pi^{5n})$
$\frac{99}{2}n^3 + e^{n-3} - 7n$	$= O(e^n)$

2015-06-15 A ident **2015-05-11 A**

2016-03-04 A:

$$\frac{12}{n^6} + 794^6 n = O(\qquad)$$
$$(42^k - k)^{567k} \cdot n^{17k} = O(\qquad)$$

Lösung:

$$\frac{12}{n^6} + 794^6 n = O(n)$$
$$(42^k - k)^{567k} \cdot n^{17k} = O\left(n^{17k}\right)$$

2016-03-04 B:

$$27n^{30} + 1^{2n} = O(\qquad)$$
$$73n + 27n^{13} = O(\qquad)$$

Lösung:

$$27n^{30} + 1^{2n} = O(n^{30})$$

Achtung: Fehler in Lösungsblattt! Hier richtig!

$$73n + 27n^{13} = O(n^{13})$$

2016-06-13 A:

$$-42n^4 + 19n^2 + 469 = O(\qquad)$$
$$\frac{99}{2}n^3 + e^{n-4} - 7n = O(\qquad)$$

Lösung:

$$-42n^4 + 19n^2 + 469 = O(n^4)$$
$$\frac{99}{2}n^3 + e^{n-4} - 7n = O(e^n)$$